



Distr.  
GENERAL

TD/B/C.4/330  
19 April 1990

United Nations Conference on Trade and Development

Original: ENGLISH

TRADE AND DEVELOPMENT BOARD

Committee on Shipping

**INFORMATION MATERIAL FOR SHIPPERS  
TO MAKE THE MOST EFFICIENT USE  
OF MULTIMODAL TRANSPORT**

*Report by the UNCTAD secretariat*

**CONTENTS**

**Paragraphs**

Introduction .....(i) - (xii)

Summary ..... 1 - 5

**Chapter**

1. Effect of multimodal transport on marketing and distribution ..... 6 - 62

2. Some aspects of total distribution ..... 63 - 112

3. Set-up of a total distribution chain .....113 - 153

**Annex**

I. Transport and distribution costs

II. Electronic data interchange

III. Selecting a transport operator

IV. Contents of a total distribution reference document

## INTRODUCTION

(i). The Trade and Development Board entrusted the Committee on Shipping, in its resolution 169(XVIII), *inter alia*, to study, make recommendations, and undertake measures on the ways in which international multimodal transport can most appropriately contribute to the accelerated development and facilitation of international trade, in particular of developing countries. The Board suggested that particular attention be paid to economic and related analyses of international multimodal transport, including effects on trade, the balance of payments, and *marketing and total distribution costs*.<sup>1</sup>

(ii). In its resolution 60 (XII), paragraph 6(iv), the Committee on Shipping requested the UNCTAD secretariat "to prepare information material for shippers to make the most efficient use of multimodal transport, taking into account its effect on marketing and total distribution costs."<sup>2</sup>

(iii). Whenever there is a commercial transaction on a product between a seller and a buyer, a legal change in ownership and a physical movement of the product will take place.<sup>3</sup> Depending on the complexity of the physical movement, the buyer or the seller (according to the terms of sale agreed in the transaction) will enter into one or more contracts of carriage with transport operators and become the shipper.

(iv). The shipper is generally defined as the party who, by contract with the carrier, consigns or sends goods with the carrier. He is party to the contract of carriage. Considering that the carriage of goods covers single-mode transport operations (such as port-to-port shipments) as well as multimodal transport operations (such as door-to-door shipments), there is a large variety of possible shippers.

(v). In port-to-port shipment, the shipper is party to the contract of carriage with the actual carrier. With the development of door-to-door transport, the shipper now deals with a combined/multimodal transport operator (MTO) who takes the responsibility for the complete transport operation although he might not be the actual carrier. Multimodal transport operations are becoming increasingly sophisticated and tailored to customer's requirements. They are particularly useful when the shipper needs to move his cargo from one country/continent to another.

(vi). With the globalization of industry, manufacturers are developing new material-supply and distribution strategies which demand much more attention than combined transport operations. The shipper or consignee requires additional services. For example, he might need to consign goods from different manufacturers in an exporting country to various distribution outlets in his own country. In such a case, he might sign as many combined transport contracts as the number of origin-destination pairs, or he might look for a reliable operator to organize and perform the entire set of movements, that is, someone to organize his total distribution (also referred to as "physical distribution") system. Such organization will allow him to obtain substantial economic benefits and financial savings.

(vii). This report attempts to inform shippers on:

- (a) the relationship between production, distribution and transport, and the effect of multimodal transport on marketing and distribution;
- (b) the main features of total distribution and its potential service providers; and
- (c) the establishment of a total distribution chain and the selection a competent total distribution operator.

(viii). The first chapter describes the importance of marketing and distribution in the production-consumption process. It presents the role of transport in the total distribution of goods and shows that the multimodal transport concept is the basic component of an efficient and reliable physical distribution system.

<sup>1</sup> Report of the Trade and Development Board on its eighteenth session (TD/B/728), September 1978.

<sup>2</sup> Report of the Committee on Shipping on its twelfth session, (TD/B/C.4(XII)/Misc.3, annex I).

<sup>3</sup> However, the product may change ownership without physically moving and it may be transported from one location to another without changing ownership. There is no reason for the two operations to be performed simultaneously.

(ix). The second chapter reviews how total distribution has developed and what services it covers. The main categories of service providers are presented and some legal aspects of physical distribution are discussed.

(x). The third chapter contains information which will assist a shipper in his process of establishing a total distribution chain. It presents the steps which could be followed in the selection of a total distribution operator (TDO), and stresses the importance of joint planning and co-ordination of the distribution operations.

(xi). The annexes include a discussion on transport and distribution costs, a presentation of the electronic data interchange concept, an example on how to select a transport operator, and a proposed table of contents for a total distribution reference document.

(xii). In the light of the large amount of literature already available on multimodal transport and physical distribution, this report emphasizes those facts and recommendations which are not readily found in books on international trade and transport. Some references are given in footnotes; many others are included in a document prepared by the International Trade Centre.<sup>4</sup>

---

<sup>4</sup> *Selected bibliography in international physical distribution and cargo transport*, Office for Latin America and the Caribbean, Division of Technical Co-operation of the International Trade Centre UNCTAD/GATT (ITC), Geneva, 1988.

## SUMMARY

1. This document focuses on distribution as a basic component in the production-consumption system. Distribution strategies are closely tied to marketing strategies. Efficient total distribution depends, *inter alia* on reliable transport services. Since distribution costs represent a substantial portion of the sales value of the goods, reasonable savings can be obtained by taking appropriate transport and logistics decisions. If transport can be integrated into a comprehensive goods distribution strategy, manufacturers might be able to compete more effectively and increase their market share. The role of the multimodal transport operator can therefore be crucial in providing manufacturers with customized distribution services. Developing countries should become increasingly aware of the issue of total distribution because it is not so much the existence of a transport sector that is a pre-condition to the expansion of their trade but rather the provision of services adequate to the different needs of their various trading interests.

2. UNCTAD has devoted extensive work to the protection of shippers' interests.<sup>5</sup> In particular, it has promoted the creation of shippers' councils. The prime purpose of such councils is to unite shippers and to give them the necessary bargaining strength to obtain adequate and efficient shipping services at the lowest possible cost. With the recent developments in electronic data interchange (EDI), multimodal transport and total distribution, this function is becoming out-dated and too limited. The number of transport operators offering competitive door-to-door services is increasing; shippers must now obtain not simply acceptable ocean freight rates or door-to-door transport rates but obtain tailor-made total distribution services. However, at present, the development of sea, air and sea-air services from developing countries is hampered by various constraints including lack of physical infrastructure as well as institutional barriers such as inefficient and cumbersome Customs procedures and the absence of competent indigenous multimodal operators. Moreover, lack of awareness, by the shippers in developing countries, of international logistics management may be one of the factors which hinders innovative services such as sea-air services and, more generally, multimodal transport services. Developing countries private and public institutions can play an important role here and UNCTAD can assist all parties interested in the issue to gain clearer insight into the economics of the industry. Work still must be done to guide such institutions on the international transport decisions they may take in order to improve door-to-door transport of their exports and imports.

3. There are various ways in which Governments in developing countries can encourage existing enterprises connected with transport to enter the field of multimodal transport and total distribution. One the most promising is for freight forwarders in developing countries to re-organize themselves so that they may participate in international multimodal transport as non-vessel operating multimodal transport operators (NVO-MTOs). It was estimated in 1988 that one-fifth of the freight forwarders in the world were located in developing countries,<sup>6</sup> and that the vast majority of them were handling general cargo. These freight forwarders can become MTOs, either separately or jointly with shipping lines or consignor organizations. They can also associate themselves with their counterparts in neighbouring developing countries, including land-locked ones, and set up such organizations at the regional level. Many freight forwarders own or control several physical elements of the multimodal transport system, such as trucks, trailers and other road vehicles, warehouses, container depots, etc., and render a variety of services such as procurement and co-ordination of various modes of transport, groupage of less-than-container-load (LCL) cargo, packing of export goods, documentation, import/export formalities, Customs clearance, etc. which arise in multimodal transport. A joint organization of freight forwarders at the national or regional level will therefore have at its disposal not only some of the expertise needed for multimodal transport but also certain requisite infrastructural facilities. Besides, it can possibly play an increasing role in organizing "land-bridge" or overland transport systems across developing countries, including land-locked ones. Their specific expertise of the transport regulations, procedures and operations in their respective regions gives them an inherent advantage which could very well be used in negotiation with foreign transport partners.

<sup>5</sup> E.g. *Protection of shipper interests: Guidelines for developing countries* (TD/B/C.4/176), 1978, and its updated version: *Protection of shipper interests: Experience in freight rates negotiations* (TD/B/C.4/332), 1990, also: *The relationship among interested parties in multimodal transport* (TD/B/C.4/243), 1982.

<sup>6</sup> *Containerization International Yearbook 1988*, London.

4. It has been stressed that, in many developing countries, competition in the domestic market for transport services is limited by government regulations or by the monopoly of state-owned enterprises. Logistics in total distribution serves as a powerful weapon for buyers and sellers as long as MTOs are given management freedom to choose and negotiate transport and other services. Therefore, instead of national legislation or regulations which may be mandatory and binding, Governments may wish to encourage MTOs to create national and/or regional associations on the one hand, and to strengthen the function of shippers' organizations, on the other. MTO associations should adopt registration schemes, standard trading conditions and/or a code of conduct with a view to ensuring minimum qualifications and standard practices.

5. Unless positive actions are taken to improve the total distribution of their overseas trade, developing countries will find that they are accepting inefficient and uneconomic situations in which the cost of supplying raw materials or distributing finished goods keeps rising, perhaps to the point of pricing some of its products out of the world market. Actions to be taken include the revision of national procedures and regulations to facilitate trade and transport, the streamlining of national transport operations and the development of a national awareness among the various local parties involved in international trade and transport. Such actions take into account the development of containerization and EDI. Developing countries must be prepared for a continuous effort to bring up to date the institutional and regulatory treatment of their international transport services. These countries may have difficulty in responding to rapid new developments which constitute barriers to entry into the world market for international transport services. Any strategy of developing countries to penetrate this world market would have to be drawn up in full recognition of the importance of technology, information, and acquired special knowledge of competing in the international market. The role of UNCTAD's technical assistance appears to be crucial in this area, particularly in terms of co-ordination with regional commissions, and governmental and non-governmental organizations.

## Chapter 1

# EFFECT OF MULTIMODAL TRANSPORT ON MARKETING AND DISTRIBUTION

### I. Production, distribution and transport

6. Over the past decades, industrial and commercial structures of industrialized countries have changed gradually from a "mass economy" requiring massive flows of goods with few differences (because of standardized and non-differentiated production) to an "economy of singularity and diversity" requiring dispersed, highly differentiated flows of goods (because of tailor-made and differentiated production). In most trades, the seller is not the manufacturer of the goods and the buyer not its final consumer. In between, various intermediaries play alternatively the role of buyer and seller and require a strict management of their increasingly sophisticated and expensive flows of goods, leading to a deep transformation of their demand for transport services. These intermediaries are part of distribution channels which move the goods from manufacturers to final consumers.

7. The concentration of production and distribution has led to a smaller number of shipping points and, especially, fewer destination points. Owing to economies of scale, causing transport costs to decline, distance is no longer a rigid obstacle. Taking advantage of the potential of division of labour, production can be fragmented into highly specialized but complementary units, sometimes quite far away from each other. Simultaneously, when the cost of money rises, inventories need to be reduced. With the increased use of computer capacity, flow optimization and route consolidation are becoming possible. As a consequence, the average size of shipments is declining because of the "just-in-time" (JIT) and "zero-stock" objectives; the origin/destination matrices of certain flows are more widespread and more complex than formerly, and the spectrum of goods is getting wider and wider.

8. Because consumers want their goods without delay, conforming exactly to their choice, within a highly competitive market, transport demand for small, punctual and frequent shipments is pushing the development of automated handling, containerization and cargo information systems. New information and communication technology is changing the individual process stages (production, storage, transportation and transaction). More importantly, such technology is transforming the integration of the process stages in the total transport chain into more efficient, but also more complex systems in which greater overall expenditure to satisfy information needs is balanced by a reduction in travel and storage costs.

9. A typical production process requires flows of raw materials and parts from industrial and manufacturing plants. The manufactured products then flow through a distribution system to consumers. Distribution is an essential element of this production-consumption sequence. It constitutes a *set of actions which will place the goods in an advantageous position with respect to their consumers.*

10. The goods might be industrial or equipment goods (such as raw materials), also called producer's goods as they are used in the process of producing other goods. They might be consumer goods used by consumers to satisfy their wants; these may be classified into durable and non-durable goods, depending whether they are single-use goods or repeated-use goods.

11. Distribution must be a dynamic process in order to "place the goods in an advantageous position". It is not enough to deliver the goods; distribution must aim at and reach the consumers. In order to satisfy consumers' wants, a distribution system must be elaborated taking into account factors such as: reliability, goods security, information services, flexibility, speed, frequency, and price.

12. **Reliability** refers to the ability to achieve very accurate performance on the basis of agreed schedules for pick-up and delivery of the goods. **Goods security** refers to the ability to achieve very low rates of loss and damage and thus maintain goods in perfect condition. **Information services** denote the ability to transfer complete, accurate information about the movements of goods at different critical

stages along the transport chain, including quick notice if anything goes wrong. *Flexibility* refers to the ability to handle variations in volumes and time scheduling without any major loss in overall efficiency. *Speed and frequency* refers to the transport time and frequency of service which has an effect on the distribution cost. *Price* refers to the price of the distribution service.

13. The importance of each factor is not the same for all types of goods. Distribution must be organized differently depending on whether the consumer is the final consumer (consumer goods) or an intermediate consumer (producer goods). The forms of organization would take into consideration the market value, the competitiveness and the attention to be given to the product. For example, products with *high* market value, *strong* competitiveness and requiring *close* control (e.g. consumer's goods such as hifi and video equipment, computers, dresses, cosmetics) require a distribution organization that provides optimal information services; goods security; price; frequency; and speed. Products with *low* market value, *moderate* competitiveness and requiring *less* attention (e.g. producer goods such as non-dangerous chemicals, construction materials, basic commodities) require a distribution organization focused on price and reliability/frequency. In other words, shippers of high-value, low-density, time-sensitive products might require good, consistent service and be prepared to pay higher prices if reasonable, while shippers of low-value, high-density commodities might be willing to accept longer transit times with lower freight rates.

## II. Marketing and distribution

14. Marketing is aimed at initiating and stimulating consumer's needs, in order to produce what can be sold instead of trying to sell what has been produced. It is an essential function of any production process and covers activities connected with transferring goods from producer to consumer, including all steps that create time utility (supply when needed), space utility (where needed) and ownership utility (for whom needed) for the goods being produced. To obtain a profitable market for its products, a manufacturer must make good-quality products at competitive prices. Once a product has been manufactured on the basis of estimated consumers' demand, it must reach potential consumers. The marketing function must determine the market coverage and the means to reach that market. The marketing strategy will establish the types and number of selling locations to be supplied with the product, and the types of physical distribution to be used in supplying it.

15. Depending on the coverage of the market (types and number of selling locations), the distribution function will be intensive, selective or exclusive. For standard consumer goods (e.g. foodstuffs), coverage must be at a maximum and distribution intensive. For more specialized products (e.g. furniture, household appliances, hifi equipment, etc.), distribution might be more selective or exclusive. In each case, supplying the goods will require different types of distribution channels.

16. Distribution channels are usually grouped into two categories, according to the number of intermediaries:

- (a) Direct (or short) channels when no middleman takes over the ownership of the goods, and
- (b) Indirect (or long) channels when one or more middlemen (wholesalers, dealers, retailers) take over the ownership of the goods for resale (merchants), or buy and sell the goods on a commission basis (agents buying and selling not on their own account but on behalf of others).

17. The use of one type of channel or another depends on the status of the selling locations to be supplied, on their geographical location and on the volume of trade involved. Supplying individual retailers may often utilize indirect channels involving the grouping of different products through middlemen, whereas supplying large department stores may rely on direct channels.

18. In both cases, a system of warehouses and platforms might be used to optimize the delivery without transferring the ownership of the goods. Warehouses are used as storage locations. Goods are stored in strategically located warehouses over a period as a means of keeping the goods closer to the consumers (logistics warehouses), or as a means of waiting for better selling opportunities (opportunity warehouses).

19. Platforms (also called "hubs"), although physically similar to warehouses, have a different function. They are used not only as transfer facilities for cargo to change modes, but also for cargo con-

solidation or de-consolidation, and for any value-added service<sup>7</sup> which might be required: intermediate storage, re-assembling, preparation of orders and loads, etc. By facilitating the collection of goods from the point of origin and their distribution at a destination, these interfaces form part of the so-called "hub-and-spokes" systems which co-ordinate new forms of mass transportation along a limited number of itineraries with the necessary diffuse pick-up and delivery transport over their whole hinterland region. Platforms serve as focal points for cargo flows and necessary data, as well as for all professions dealing with freight movement.

20. A simple description of the two types of physical distribution channels could therefore be:

(a) **Direct channel:**

- Supplier → selling location
- Supplier → platform → selling location

(b) **Indirect channel:**

- Supplier → warehouse → selling location
- Supplier → warehouse → platform → selling location.

21. With regards to distribution, the marketing strategy will have to determine both the type of selling locations to supply and the channels to be used. This decision will integrate, *inter alia*, the potential market, the financial capacity of the manufacturer and the specific constraints imposed by the nature of the product (perishable or dangerous goods). In most cases, a manufacturer will not choose only one channel but various complementary channels.

22. In dealing with the issue of distribution, manufacturers and middlemen have different strategies:

The *manufacturer's* strategy focuses on the spatial organization of his production and distribution units where physical separation is less and less a determinant criterion. Co-ordination and complementarity of these units are key issues together with the flexibility of the production system. Production must be able to fit any variation in demand. It must be dynamic and able to react in real-time. Each step of the production process must be initiated right on time, not too early, so as to avoid over-capacity and inventory costs, and not too late, so as to avoid losses from missed supply opportunities.<sup>8</sup>

The *middleman's* strategy is to increase his geographical coverage or to specialize in particular regions. More importantly, he develops his own distribution strategy by adding to his networks of selling locations a network of warehouses and platforms. By so doing, he increases control over the distribution chain. The goods traded generally need to transit through these warehouses and platforms for logistical convenience. The cost of such transit may be more than balanced by quantity rebates obtained from suppliers. These installations are also used to speculate in consumer demand by storing large quantities of goods (e.g. quantities corresponding to various weeks of sale) obtained from suppliers at promotional rates.

23. The development of the activities of middlemen in the field of distribution weakens the relationship between producer and consumer, particularly in the sector of consumer goods. Manufacturers no longer know their real consumers. This situation induces manufacturers to keep large inventories in order to be able to satisfy large, and sometimes unpredictable, quantity orders from middlemen. It also reduces the number of clients to a limited group of key middlemen and therefore threatens manufacturers' commercial power.

### III. Total distribution

24. *Total (or physical) distribution* refers to the movement of the flows of the goods which a firm endeavours to ship (finished products, parts), transfer (semi-finished products, goods in process) or receive (raw materials, supplies, etc.). It involves the transfer of goods between different modes of transport, possibly across borders, with a systems approach to all activities and functions in the

<sup>7</sup> Value-added service is a service the value of which is higher than the sum of the value of each of its components.

<sup>8</sup> Jean Pierre Carrillon, *Le "juste à temps" dans la gestion des flux industriels*, Les Editions d'Organisation, Paris, 1986.

distribution chain in order to reduce and, where possible, eliminate interruptions in the continuous movement of goods and transport equipment from origin to destination. Distribution costs include: transport, packing, handling, storing (warehousing), inventory, order processing, material, personnel, etc.

25. Total distribution requires tight control and exact scheduling and transport of raw materials, semi-manufactured and manufactured goods from the factory of origin to the buyer's factory or even directly to the buyer's retail outlets according to carefully planned time schedules. The shipper in many cases considers this door-to-door transport movement as a pipeline or conveyor belt operation with no interruption at all. Such operations require close collaboration and meticulous planning between the transport operator, the shipper and the consignee, in order to attain the lowest overall distribution costs. It does not necessarily mean that the cost of the transport itself is thereby cheaper than more "traditional" methods of transport, but that the total cost of the product delivered to the consignee is reduced.

26. To perform total distribution of goods, three basic functions must be considered: a *transport* function to move the goods from one terminal facility to the next; a *handling* function to move the goods from a platform/quay onto a vehicle or *vice-versa*; and a *storage* function to keep custody of the goods while they await the next move. Each function requires adequate organization to look after the planning and information necessary for the performance of the function.

27. Each function carries its own cost which can be disaggregated from the cost elements mentioned earlier. Therefore, the cost of total distribution relates to an economic aggregate in which transport costs, handling (material and personnel) costs and storage (packing, warehousing and personnel) costs are all combined.<sup>9</sup>

28. Manufacturers have to make several key economic decisions when setting-up their trade systems. These decisions will create the basic transport-flow pattern of their trade and affect their logistics costs. Some decisions have long-term implications: plant location, sourcing, and market development (including selection of appropriate middlemen). Others have short-term implications and include locations of warehouses, distribution centres and carrier pools; level and location of inventory; modes of transportation and carrier mix (including the use of private fleets); shipping patterns and frequencies; and size of shipments.

29. Such short-term and long-term decisions are approached in different ways by different companies. This is particularly the case when companies seek international market coverage. No two companies set up their international distribution in exactly the same way, even among companies of the same size in the same industry. They might choose among a number of distribution options such as:

- (a) Direct distribution;
- (b) Distribution through export trading companies;
- (c) Use of local firms to identify a company representative on-site in a foreign country;
- (d) Nomination of an agent representing the firm in a foreign country;
- (e) Distribution through a foreign-based wholesaler/distributor;
- (f) Establishment of a company sales office abroad;
- (g) Establishment of a manufacturing facility acting as a distribution centre abroad; and,
- (h) Establishment of distribution centres abroad.

30. The distribution channel chosen generally is based on the amount of international business the company does and on its degree of sophistication in international commercial arrangements. Firms with little international involvement tend to distribute directly on a shipment-by-shipment basis. As firms increase their overseas activity, it is more common to find an agent representing the firm or else the company may distribute through a foreign-based wholesaler/distributor who knows the market well. An on-site company representative who relies on local firms is also common. Firms with heavy involvement in a country tend to utilize a sales office or a plant located abroad, or to tap the expertise of a distribution centre abroad.

31. In all cases, the manufacturer must decide whether his total distribution will be externalized ("farmed-out") or internalized ("home-made"). The choice will depend basically on the importance he assigns to the transport function:

<sup>9</sup> Annex I presents various ways and means to reduce transport and distribution costs, and a discussion on the magnitude of these costs.

- (a) Either the manufacturer acts as if he was not concerned about a transport service which, however mandatory, is completely externalized to third-party transport operators; or
- (b) The manufacturer integrates to some degree the transport function into his firm's general strategy.

32. The first case is quite common. The manufacturer keeps marketing in-house and "farms-out" logistics service requirements (e.g. freight forwarding, warehousing, packing, and all transport modes) to full-service transport-chain organizers that serve many product flows in the international trade market. It can mean that the manufacturer has no idea of what the transport of his goods really costs. Because of factors such as unequal negotiating power between users and providers of transport services, general excess capacity of main transport facilities, or relative under-pricing of services, the present transport system may be viewed by such a manufacturer as functioning quite satisfactorily. It can also mean that he realizes the complexity of a distribution system and hence prefers to pay for a total distribution service fitted to his manufacturing, marketing and retailing needs without entering into the nitty-gritty of managing it. The argument here is that a properly managed distribution service enables the manufacturer to reduce transit times for his shipments, monitor his inventory levels more effectively, reduce warehousing and distribution costs and, if he is a retailer, put the most saleable goods on display at the appropriate moment, thereby speeding up stock turnover and achieving better profit margins. It is contended that the economic advantages to a manufacturer of pursuing a "farming-out" strategy should overcome any concern he may have over its price implication.

33. In the second case, the manufacturer endeavours to reduce and manage his stocks by building up a consciousness of the transport function. He develops a transport accounting system and, more and more frequently, he arranges and contracts the transport operation himself. If the aspects of absolute control over his logistical chain seem paramount in his development strategy, he will seek partners rather than transport service contractors and thus combine or link complementary production units or production-and-distribution units. He endeavours to smooth out fluctuations and creates his own warehousing and platform systems. Manufacturers have given increasing attention to own-account transport (particularly in road transport), a trend which demonstrates the inadequacy of the services provided by modal operators to satisfy customers' new requirements. This highlights the challenge offered to transport operators in this sector.

34. The increasing involvement of buyers and sellers in the total distribution chain may even, at present, result in strategy conflicts between the logistics of the buyer and the logistics of the seller, when the logistics of one "meets" the logistics of the other as they move respectively down and up the distribution chain. Competing chains thus become juxtaposed as the result of two opposing forms of commercial thinking. This competition is in addition to that which traditional transport operators, aware of the inevitable change in their role, intend to develop. These operators are going beyond haulage to the provision of increasingly sophisticated logistics services, including "expert advice on logistics" in the range of their services. Not only can they resolve, to their own advantage, the type of conflict mentioned above but also, in order to keep or gain control over the chain and become its principal operator, can they develop and impose strategies which are not dependent on any particular transport mode ("a-modal" strategies<sup>10</sup>) and which make them virtual partners of industry and trade.

35. In either case, many transport operators with well-established door-to-door service networks are helping manufacturers understand the importance of the transport function so that they can realize the productivity gains that may accrue through efficient management of the distribution process. Their motives are not entirely altruistic since an operator also stands to gain from pursuing a distribution, as opposed to a transportation, strategy because there is an expectation that transport revenues will rise, for not only will the transport operator be able to secure additional revenue for the extra service being provided, but there will be an increasing number of commodities requiring more sophisticated transport packages. The user will inevitably be tied much closer to the operator offering such packages. Over the longer term, increased co-operation of this kind between manufacturers and transport operators should lead to less pressure on prices and enhanced profit margins for transportation companies.

<sup>10</sup> The concept of "a-modal" transport operators is discussed in *The concept of logistic chains and its impact on transport trends and policy*, prepared by Prof. Sten Wandel, International Institute for Applied Systems Analysis (IIASA), TRANS/GE.36/R.20, for the Group of Experts on Transport Trends and Policy, Inland Transport Committee, Economic Commission for Europe, Geneva, July 1987.

36. Many major shippers in the United States, Europe and the Far East are coming to recognize the benefits of developing a distribution system in concert with a carrier, or carriers, of their choice. A large car manufacturer, for example, pointed out the enormous savings to be made by paying close attention to total flows of materials, both internally and externally,<sup>11</sup> and predicted that the shipper of tomorrow would be more professional and specific in his service requirement and willing to pay more in freight in order to have guaranteed precise delivery times and superior frequency.

37. Conversely, there will continue to be a large sector of the transport users' market which will probably never need complex distribution packages. Nevertheless, as the nature of goods traded, especially between Asia and the United States, Europe and the United States, and the Far East and Europe, becomes more sophisticated, demands for such services will increase. Instead of the antagonistic approach, which has often been observed on both sides of the manufacturer/carrier divide in the past, enhanced co-operation and the growth of mutually beneficial working relationships between transport operators and manufacturers should result.

#### IV. The role of multimodal transport

38. *Multimodal transport* (MT), as defined in the MT Convention<sup>12</sup>, can be seen as an instrument which facilitates international total distribution. The MTO is a carrier who offers a package including not only transport, handling and storage of goods, but also full responsibility for the goods from origin to destination on the basis of a single MT contract. He acts as a carrier in an international intermodal transport operation. For example, shipping goods from Des Moines (United States of America) to Kampala (Uganda) becomes, for the manufacturer of those goods, an operation as simple as having the same goods trucked across the United States from Des Moines to Chicago. A specialist in the transportation field, the MTO is capable of combining the most economical and efficient modes and interface facilities (including warehouses and platforms) from origin to destination as required by the manufacturer who is the shipper in the MT contract. The MTO's function is to satisfy effectively and reliably the modern transportation needs of shippers for executing the performance of an international multimodal cargo movement in order to reduce manufacturing and distribution costs. Multimodal transport not only shortens the transit time but also improves the punctuality of delivery time thanks to tightened supervision as well as technological developments such as containerization and EDI.<sup>13</sup>

39. The decisions with respect to the choice of route, modes or carriers are usually made by the MTO, unless otherwise requested by the shipper. This allows the MTO to offer a value-added service. Indeed, the MTO may enjoy market power by virtue of being able to generate and offer large traffic volumes to individual subcontractors. These factors may place him in a position to negotiate volume discount rates from the unimodal carriers and other subcontractors. In so doing, the MTO's cost for a particular multimodal movement would be less than the shipper's cost on a segmented basis. Consequently, the MTO may quote shippers competitive door-to-door freight rates. The total sum of the segment rates works as a ceiling for the door-to-door rate, since it would be the approximate price level which would attract or discourage shippers.

<sup>11</sup> "Watch out, the revolution is not over yet" by Rune Svenson, vice-president of AB Volvo Transport, Sweden, published in *Containerization International*, June 1983.

<sup>12</sup> The United Nations Convention on International Multimodal Transport of Goods (the MT-Convention) defines *multimodal transport* as:

"...the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country."

and *multimodal transport operator* (MTO) as:

"...any person who on his own behalf or through another person acting on his behalf concludes a multimodal transport contract and who acts as a principal, not as an agent or on behalf of the consignor or of the carriers participating in the multimodal transport operations, and who assumes responsibility for the performance of the contract."

<sup>13</sup> Annex II provides a short description of the "state of the art" in EDI.

40. Multimodal transport services bring another value-added benefit to shippers as they can negotiate sales contracts with buyers on the basis of delivered prices, using the INCOTERM "Carriage Paid To" (CPT) in their trade negotiations. The calculation of door-to-door transport costs is easier with the single-factor through rates offered by MTOs. Negotiations based on delivered prices facilitate and promote international trade.

41. In organizing a transport operation, the MTO plays a dual role. In the eyes of the manufacturer (the shipper), the MTO is a (multimodal) carrier. In the eyes of his unimodal sub-carrier, the MTO is the shipper. The need for the MTO to subcontract elements of the movement, storage, terminal services, etc. is part of the very nature of multimodal transport. This holds true in most cases, even for the sophisticated operators who have developed co-ordinated or integrated systems for the operation of a transport chain.

42. There are various types of MTOs which can be grouped into vessel operating multimodal transport operators (VO-MTOs) and non-vessel operating multimodal transport operators (NVO-MTOs).

#### *A. Vessel Operating Multimodal Transport Operators (VO-MTOs)*

43. Traditionally, shipowners were content to carry cargo from port to port and they limited their responsibility for the cargo to the time when the goods were on board ship. Mainly because of containerization, many shipowners have now extended their services to include carriage over land and even carriage by air. Such a combination of modes of transport qualifies vessel operating companies as MTOs. Usually, they do not own or operate the means of transport of goods by road, rail or air but simply arrange for these types of transport by sub-contracting with unimodal carriers. Additionally, they would usually sub-contract inland stevedoring and warehousing services.

#### *B. Non-Vessel Operating Multimodal Transport Operators (NVO-MTOs)*

44. Transport operators other than ocean carriers may also offer to arrange the through transport or door-to-door transport of cargoes using more than one mode of transport. Instead of subcontracting the inland or air segments of the transport, they may instead subcontract the ocean voyage, i.e. they will not themselves own or operate the vessels which perform the ocean voyage. For this reason they are known as "non-vessel operating MTOs" or "non-vessel operating common carriers" (NVOCCs).

45. These types of MTOs usually own only one type of transport means, e.g. trucks or, in rarer cases, airplanes or railways. It must be noted, however, that in most cases these transport means would be owned only at one end of the route, for example a trucker in Europe would rarely also own or control a complementary trucking company on another continent.

46. Another type of MTO does not own any means of transport, as for example freight forwarders, customs brokers or even, again in rare cases, warehouse operators or stevedoring companies. This type of MTO will have to sub-contract all modes of transport. Since they don't own any vessel, they are conveniently lumped together with the MTOs described earlier under NVO-MTOs.

47. Finally, there are companies which have been established with the exclusive aim of providing multimodal transport services. These NVO-MTOs may in the future become the only type able to challenge the dominant position of VO-MTOs and may be the type which will offer developing countries the best scope for participation in multimodal transport. By avoiding investments in various types of transport means - except perhaps for short haulage - they can at any moment choose the type of transport or combination of different modes of transport which is most economical and efficient and thus the one which meets the needs of their customers. This type of NVO-MTO has no commitments or vested interests in any particular modal operator. In decisions when assembling a transport chain it can concentrate on the needs of its customers. Its activity, however, requires an efficient organization and reliable partners with whom it can co-operate within the field of its activities. It would have to control a sufficient volume of cargo to be able to sub-contract on competitive terms sea, road, rail or air transport as well as stevedoring and warehousing services. Without sufficient volume, the MTO would not be able to provide *regular transport* on competitive terms. But with sufficient volume of cargo it would, in most cases, be able to reach this aim better than VO-MTOs or the other types of NVO-MTOs.

48. In addition to traditional services related to international transport, MTOs are now extending their services into other areas of shippers' logistics management such as depot management, inventory control, order processing, assembling of cargo before shipment and distribution to retail outlets. For example, a large Danish NVO-MTO offers its depot in the United States as a distribution centre for shippers, where it performs these services on behalf of the shippers enabling them to save investments in their own distribution facilities. Other NVO-MTOs, functioning within major freight forwarding groups of the Federal Republic of Germany, have introduced cargo assembling services for West European importers such as department stores. When imports arrive from several suppliers in Japan, the Far East and other Asian countries, these MTOs firstly check with each source on the readiness of cargo and report to the importer and, secondly, examine the quality and quantity of the supplied goods before shipment on behalf of the importer. Thirdly, when LCL cargoes are supplied, they assemble the goods in their container freight station (CFS), and make up full-container-loads (FCLs) which are shipped in accordance with the importer's instructions. If necessary, MTOs can co-ordinate deliveries from more than one country of origin. When the containers arrive in Europe, these MTOs then perform the entire process required for final deliveries, including Customs formalities and inland haulages with direct deliveries to individual points of sale.

49. These examples demonstrate that the MTO is a suitable partner of the manufacturer who wants to establish a long-term, reliable distribution structure.

## V. Shipper-MTO partnership in total distribution

50. Most industrial and commercial sectors now realize the importance of developing strategic alliances between partners in a common production-consumption system. Such strategic alliances assume:

- (a) The sharing of long-term plans needed to co-ordinate new product introduction or market expansion;
- (b) The sharing of information to co-ordinate operations by systematically processing needed demand data throughout the supply chain;
- (c) A clear understanding of customers' needs by all vendors;
- (d) Shared, if not identical, quality monitoring and measurement techniques; and,
- (e) The willingness to participate in a win-win relationship where there is more to be gained by strong co-ordination with the best in the industry than by constantly squeezing the last penny out of a price bid.

51. In this context, manufacturers and middlemen are today increasingly concerned with the development of long-term relationships with transport operators, particularly when they realize that a system using their own vehicle fleets and their own logistics forces is not necessarily more economical or cost-effective than utilizing similar services from outside providers. This relationship is defined by a new type of carriage contract in the form of a partnership agreement. Under such an agreement, the MTO (contracting carrier) performs all logistics functions on behalf of the shipper but leaves the shipper complete control of total distribution. The MTO thus offers more than just multimodal transport operations; he becomes a total distribution operator (TDO). For example, in addition to providing transport services, the TDO can analyse the shipper's logistics needs, then design networks and systems to meet those needs, and provide highly sophisticated, customized services within that design. Furthermore, the shipper may delegate to his partner-TDO such tasks as warehousing, pre-assembly, staging, sub-assembly, minor transformation, reconditioning, labeling, packaging, checking and price marking. An ultimate phase of such a logistics partnership comes when the TDO actually is invited to acquire shares in the shipper's operations or *vice-versa*; in other words, when the shipper's logistics system has been placed completely in the hands of his partner-TDO. Shipper and TDO jointly plan the service, but the TDO manages it and assumes full responsibility for its implementation and performance. Pricing and service are monitored and guaranteed. All costs are disclosed so that both parties share the increased productivity or, otherwise, jointly discuss and find means and ways for improvement.

52. The advantages of such a partnership are manifold if carried out successfully. The following are some of the major benefits for the shipper:

- (a) The shipper can expect reduced system costs and improved service levels, since the TDO generally has greater expertise in transportation, distribution and related disciplines than the shipper has;
- (b) The shipper can expect a higher return on investments, since he can redeploy in his primary business those assets which would otherwise be invested in logistics fields;
- (c) Labour costs can be reduced through the negotiating expertise of the TDO, who can frequently improve productivity with contract and work rule changes, without lowering wages;
- (d) The shipper can enhance his flexibility and respond to changing market conditions more quickly because the TDO is prepared to respond quickly to seasonality or peak-load demand and also to provide his shipper with cost-cutting backhaul efficiencies;
- (e) Reliance on an efficient TDO allows the shipper to provide JIT supplies to his customers. Shorter production runs for the customers replace supposedly cheaper long runs which require large safety stocks throughout the supply chain. JIT eliminates these inventories and, thus, reduces overall distribution costs; and,
- (f) The shipper gets the benefits of accessing the most appropriate transport technology in a very cost-effective manner, since the TDO, as logistics partner, looks for increased productivity by making use of well-maintained transport equipment and facilities along with efficient computers and electronic information systems to move and keep track of the shipper's cargo.<sup>14</sup>

53. In order to establish such a constructive partnership, both the shipper and the TDO must seriously consider:

- (a) A common elaboration of the "know-how" related to the international distribution of the shipper's products;
- (b) Total transparency as regards technical and economical transport and distribution alternatives existing or to be developed;
- (c) Adapting and controlling permanently the technical as well as economic data through adequate, smooth collaboration between the partners, in order to realize cost-effective rationalization to cope with the economic situation of the moment; and,
- (d) Total, fair and mutual confidence as partners in the same logistics chain.

54. Through such a relationship, the shipper will be in a position to appreciate the cost of shipping his goods as well as the ways and means to save time and money on shipments. By better understanding the transport issues, he will be able to make innovative suggestions to improve his distribution system.

55. To establish such a relationship, the shipper must look for suitable partner(s), taking into account every phase of the movement from original producer to ultimate consumer, according to the characteristics of the commodity being traded. His choice will be guided by the available transport services and their level of development. This issue is discussed in the following chapter.

## VI. Total distribution and developing countries

56. With the trend towards globalization of modern developed-country industries, businesses are sourcing in one continent, manufacturing in another, and selling in a third. Such a set-up is not established for logistical reasons but, generally, because of simple labour-cost considerations. Since de-

<sup>14</sup> *Proceedings of Annual Meeting*, September 1987, Vol. II, Council of Logistics Management, Oak Brook, United States, 1987, p. 114. See also: *Contract logistics*, American Shipper, Jacksonville, United States, February 1988.

veloping countries do not have much control over their competitors' labour costs, they should pay attention to logistics in order to become less vulnerable to changes in one single-cost factor such as labour. Indeed, countries that ignore logistics factors tend only to get the footloose industries<sup>15</sup> that work primarily on marginal costs of labour and avoid heavy investments. Once these costs rise, such industries move on to cheaper places and one developing country runs the risk of being substituted by another as supplier of industrial goods to outsourcing developed country industries.

57. Developing countries are generally importers of consumer goods and exporters of producer goods (basic commodities and raw materials). They sell free on board (fob) but buy on a cost, insurance and freight (cif) basis. By so doing, they have no control over the cost and quality of their transport and distribution options. Cost and quality of services can have a critical effect on their industry. This is particularly so for infant manufacturing industries established for the purpose of processing imported raw materials into manufactured or semi-manufactured exports, taking advantage of relatively low labour costs. Such industries can only remain viable so long as the costs and difficulties of transport do not outweigh the savings and convenience derived from the use of local labour. In this way, developing countries balance their logistics diseconomies with labour economies. Cost and time of shipping goods may be determining factors for an overseas buyer in deciding whether to import from one source or from another, or whether to use alternative materials which do not need to be imported at all. Some developing countries are known for their cheap labour but their exports may be more expensive than similar exports from other developing countries, simply because of export procedures and transport costs. Quality of services is an equally important issue as overseas buyers may be deterred from using a particular country as a source of supply on account of inadequate services, long transit times, or irregular time-tables. The case of West African cocoa producers has been reported:<sup>16</sup> these producers lost a 40-year contractual relationship they had with European chocolate manufacturers to Central America competitors, simply because the way their competitors packaged and delivered the product was more economical for the importers.

58. As discussed earlier in this chapter, many individuals and bodies can be involved in the marketing and distribution of a commodity. These include producers who sell and ship their own products, merchant houses which do not produce but which handle overseas sales and arrange shipments, and various intermediary brokers who negotiate the sale of goods which they neither produce nor ship. Therefore, many shippers do not themselves produce or own the goods which they ship. In developing countries, this may lead to situations in which shippers have no interest in resisting freight rate increases as long as such increases do not actually restrict the flow of trade. In fact, higher freight rates may increase the profits of middlemen merchants whose remuneration may be based on a percentage of the cif value of the goods they handle. These middlemen may simply pass on the freight increases by increasing the market prices of imported consumer's goods, and by decreasing the fob prices which they pay to the producers of export goods. This may particularly be the case in the retail food-distribution industry which has become increasingly large-scale and concentrated. The increased concentration in the trade, processing and distribution of a given commodity decreases the negotiating powers of commodity producer countries.

59. Such situations are counter-productive and do not take into account that the world economy has changed for everybody. Firstly, there has been a revolution in the management of transport, including intermodal operations of containers and EDI, as a response to changes in industrial processes. JIT practices depend not on services that are fast, but on services which are punctual according to whatever time-table has been agreed upon. Reliability is more important than sheer speed. Secondly, many new industrial locations have been established in developing countries. These countries have had to face the demand for better trade logistics for the first time. Thirdly, because of the new link between transport and inventory level imposed by modern JIT practices, the total distribution/logistics function now has a direct role in the running of the production lines and the financing of the company's stocks. When industry was essentially based on a straight production process with raw materials at one end and finished products at the other end, logistics was simply about expediting the company's shipments. Today, with the globalization of the manufacturing industry, the same job has turned into a matter which deeply affects the company's basic operating costs and utilization levels of machinery and other assets. Large manufacturers covering worldwide markets cannot tolerate much in the way of logistical failures.

60. The relationship between strategies to decrease inventory and information technology has started to turn plain transport into more advanced logistics. Even more than the physical transport, reliable

<sup>15</sup> L.H. Klaassen defines a "footloose industry" as an industry whose long run profitability is the same for any location in an economy, in *Methods of selecting industries for depressed areas: an introduction to feasibility studies*, OECD, Paris, 1967.

<sup>16</sup> *Intermodal Asia*, Summer 1989 issue, Lloyd's of London Press (Far East) Ltd., Hong Kong, 1989, p.16-23.

advance information on the progress of the cargo is becoming the effective substitute for inventory holding. Containerization has meant that almost all carriers can physically deliver cargo safely; but with importers planning everything on zero-inventory JIT arrivals, there is a premium on information about the cargo and its arrival. Providing this service opens up new horizons to transport operators wishing to become TDOs. They must start working closely with manufacturers to improve stock control, to plan production and sourcing in different countries, and to distribute the finished product. To provide such services, TDOs must develop efficient information systems.

61. In the developed world, the basic industrial areas have to a large extent been optimized and major benefits can therefore now only be expected in the logistics links between plants and between markets. Although such issues might not be considered as top priority by most developing countries, they should pay particular attention to logistics-related decisions which they might have to take. In order to avoid that a lot of industrial efforts go to waste, or potential foreign investments and foreign exchange earnings pass them by, developing countries need to be able to export products efficiently. Logistics therefore has a special place in the Third World.

62. Developing countries might have to decide on their strategy regarding transport and distribution. They could adopt a "*laissez-faire*" attitude by facilitating the work of operators and buyers from outside. But high-quality transport and distribution companies from developed countries require some minimum conditions in place before they can operate. Such minimum conditions often require more than just a passive and facilitating attitude from developing countries. The streamlining of commercial practices and the establishment of governmental procedures and regulations according to international standards are among the main considerations. As an alternative, developing countries can promote better logistics and bigger investments in higher value-added production. This would most likely attract industries which settle in one place and try to transport their products at the cheapest costs; it would deter lighter, non-logistical industries which economise by constantly moving factories to places where labour is cheaper. Developing countries would thereby recognize that logistics remains a determining factor for investment and is clearly something which developing countries need to tackle if they wish to advance beyond the primary-transformation industry stage.

## Chapter 2

### SOME ASPECTS OF TOTAL DISTRIBUTION

63. In recent years, the changes in production patterns within commerce and industry have called for new transport services regarding material supply and physical distribution with mass production becoming increasingly globalized. Manufacturers are sourcing their raw materials and semi-finished products in one continent, manufacturing in another, and selling in a third. An increasing use of division of labour has entailed an increase in transport demand and a spread in the range of products supplied. It is not enough to provide sufficient transport capacity to satisfy demand; over-capacity is sometimes a necessity to cater for shippers' demand in terms of availability and flexibility. Against this increase in transport demand, on the one hand, small, punctual and frequent shipments call for more individualized transport, on the other hand, allowing production of goods to be tuned to consumers' demand. Lower inventories are thus possible along with higher production capacity utilisation, which reduces the overall cost of production and distribution.

64. The integration of transport with other services such as stock management, packing and labelling of products, insurance and banking operations related to the movement of goods, border formalities, etc., improves transport services to manufacturers. Depending on their development strategy, manufacturers might use such improvements to expand their market share or to raise their price. Excellence in expanding traditional transport services to total distribution services opens up large markets for providers of such services.

#### **I. The development of total distribution**

65. In a commercial transaction, seller and buyer agree on when the ownership of the goods will be transferred from one to the other and on whom the responsibility to organize the movement of the goods traded will devolve.

66. In the early days, goods were moved from the seller's premises to the buyer's in a series of unimodal break-bulk cargo moves. Cargo was exposed to various loss and damage possibilities; the liability of the door-to-door transport operation was segmented. The development of containerization in the 1960s and 1970s also greatly improved the security and reliability of cargo movement. Little by little, carrier's liability was improved with the refinement of combined transport operations based on the rules and practices recommended by the International Chamber of Commerce (ICC).<sup>17</sup> Once the MT Convention comes into force (*op. cit.* paragraph 95), the modified network liability system imbedded in this Convention will further improve the existing situation. In the meantime, ICC and UNCTAD are jointly updating the uniform rules to produce a new set of uniform rules for multimodal transport.

67. When the buyer is sourcing his different goods from different sellers, the multiple corresponding cargo movements have to be co-ordinated. With each seller, a transport chain for the corresponding traded goods must be organized. Each transport operation might be performed as a combined/MT operation, but the buyer still needs to plan his supply requirements and monitor the operation to make sure that the right product arrives at the right time and at the right place. This task could very well be passed to a transport specialist or an MTO.

68. Total distribution resembles a refinement of multimodal transport. All transport operations can now be performed under a MT contract and the co-ordination/logistics of the cargo movements can be monitored by an operator, the total distribution operator (TDO). Based on the various sale contracts between the buyer and the sellers, the TDO will take over the goods at the premises of each seller and consolidate the shipments into unit loads in a warehouse or platform before sending them *via*

<sup>17</sup> *Uniform rules for a Combined Transport Document*, ICC No.298, ICC, Paris, 1984.

various modes of transport to the buyer's country. There, the TDO will arrange to separate the transport units and deliver the goods in appropriate shipments to their final destinations.

## II. Total distribution and logistics

69. Total distribution is therefore closely associated with the concept of logistics which is defined by the Council of Logistics Management as:

"the process of planning, implementing and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished goods, and related information from point of origin to point of consumption for the purpose of conforming to customers requirements. This definition includes inbound, outbound, internal and external movements".<sup>18</sup>

70. Logistics is a management technique to control the total distribution on a synchronized basis. Such a technique anticipates and follows up action through an information flow which permits downstream-to-upstream management of the physical flows of goods. The logistics organization of a total distribution system must be planned for and geared towards real rather than forecast demand. It implies a development strategy which covers:

- (a) Over the short-term, transport and storage operations and decision-making as regards production, supply and distribution;
- (b) Over the medium-term, the set-up, co-ordination and monitoring of appropriate management systems; and,
- (c) In the long-term, the selection of adequate policies on plant location, production levels and market outlets.

Logistics organization is becoming possible, as result of the progress in micro-electronics (for gathering basic data), in robotics and automation (for flexible production) and in communication networks and information processing techniques (for rationalizing the system).<sup>19</sup>

71. The use of EDI based on communication networks and information processing techniques is crucial for managing upstream and downstream flows of goods and documents. Information networks have therefore to be designed with both centralization and decentralization in view. The central unit co-ordinates the different stages of the materials supply, production and distribution cycle on the basis of data related to the volume of goods required, their specifications, production and transport timetables, current goods availability, as well as location of suppliers and subcontractors. Such co-ordination must be prepared to cope with unexpected events, which means that information on filled orders and deliveries has to be fed back up the chain. Insofar as production is the leading process, the basic role of logistics in physical distribution is to use information for organizing and managing the sequence of operations.

72. Transport operations are therefore subordinated to this logistics organization and must not disrupt it. They must comply with the specifications laid down in the logistics system, and must be of a high standard in order to ensure JIT quality. Transport norms must be specified for each link in the physical distribution chain, and a transport operator must clearly comply with these norms if he wishes to remain in the market.

73. One important norm refers to the provision of information on cargo movement. A transport operator must constantly keep the total distribution system of the consigners and consignees supplied with information. If ongoing adjustments are to be made in the light of what happens to consignments en route, information must flow in both directions and be both centralized and decentralized. It is therefore essential that the management information systems related to the various operations be compatible with and aligned to UN/EDIFACT standards.

<sup>18</sup> *Corporate profitability and logistics: innovative guidelines for executives*, prepared by Ernst and Whinney for the Council of Logistics Management, Oak Brook, Illinois, 1987.

<sup>19</sup> See *The role of shippers and transport operators in the logistics chain*, ECMT Round Table 76, Paris, 1988.

74. Different manufacturers have different distribution needs depending on the kind of goods, the places in which supplies are bought and goods marketed, and customers' requirements. Accordingly, service standards are specific to each total distribution chain. A transport operator must develop a clear understanding of the industrial process to which he wants to contribute. He must realize the importance of building up a partnership with his clients rather than engaging in a "one-shot" commercial venture. More and more, his future will be closely linked with the requirements of the buyers and sellers. Only those transport operators who can envisage themselves in the role of an extension of the production process could thrive.

### III. What services do shippers require?

75. In order to grasp the complexity of establishing a total distribution system, it is necessary to review what services buyers and sellers expect from such a system. These services can be summarized in the following manner:<sup>20</sup>

- (a) Transport operations for supplying raw materials, for moving goods between production units, or for distributing production towards warehouses, platforms and selling locations:
  - Consolidation;
  - Deconsolidation;
  - Delivery; and,
  - Vehicle renting.
- (b) Transport ancillary operations:
  - Transit;
  - Customs; and,
  - Freight forwarding.
- (c) Physical distribution operations:
  - Handling operations;
  - Shipment reception;
  - Quantity and quality control;
  - Storage;
  - Random check;
  - Stripping;
  - Cargo mixing and preparation of mixed loads;
  - Labeling and price marking;
  - Bar-coding of shipments;
  - Reconditionning;
  - Order preparation;
  - Weighing;
  - Packaging;
  - Packing and bundling;
  - Preparation of unit loads;
  - Pre-invoicing;
  - Dispatching; and,
  - Final delivery.
- (d) Stock management:
  - Storage and management of inventories;
  - Computerized management of shipper's products;
  - Management of peremptory dates on perishable products;
  - Management of raw materials, semi-manufactured and finished products for industrial units using JIT and without any means of storage; and,
  - EDI connection between providers of services, shippers and consignees.
- (e) Commercial operations:
  - Invoicing;
  - Merchandising;
  - Maintenance services;
  - Availability of offices and logistics/computer tools for the shipper at carrier's facility;
  - Set up of modular tariffs for the different services; and,
  - Administration and handling of loss and damage to the goods.

<sup>20</sup> From *La logistique de distribution*, Jacques Colin and Gilles Paché, Chotard et associés éditeurs, Paris, 1988.

(f) Product finishing operations:

- Final assembly and testing of products (for certain types of consumer's goods such as household appliances).

(g) Logistics assistance operations:

- Definition of means and procedures to be developed in order to optimize logistics operations at shipper's level, service provider's level and consignee's level.

#### **IV. Bases for a partnership**

76. The above listing of total distribution services required by buyers and sellers covers a wide range of activities performed by a number of actors. When the time comes to establish a partnership in order to organize international shipments as part of a distribution strategy, each party must be aware of the expectations of the other parties involved.

77. The shipper expects from his competitive and dynamic provider of transport services the following:

- (a) Capacity to organize and perform international transport operations and to take a carrier's responsibility from beginning to end;
- (b) Management and control of warehouses for distribution, and use of adequate and modern techniques for transshipment and storage;
- (c) Possibility of joining communications links between the shipper, the transport services provider and the consignee;
- (d) Comprehensive solutions to the materials supply of his production lines, as well as to the physical distribution of his finished products to final consumers; and,
- (e) Quality and reliability in all the distribution operations.

78. In return, the transport services provider expects the following types of actions from the shipper:

- (a) Long-term contract offering him the possibility to defray the investment costs of his transshipment warehouses and distribution platforms possibly designed, built and equipped for the shipper's specific needs and products;
- (b) Complete and clear information on the characteristics of the goods being transported, on their handling/storage requirements and constraints;
- (c) Freedom to assemble appropriate transport chains at his own "convenience", without being bound to use specific means of transport;
- (d) Possibility of computer connection with shipper's information system; and,
- (e) Fair remuneration for satisfactory and efficient total distribution solutions.

#### **V. Who can offer total distribution solutions?**

79. The question now is: who are the potential partners to assist the buyer or the seller in establishing a tailored total distribution chain? There are various potential partners which can be grouped as: NVO-MTOs (transport operators and freight forwarders) and TDOs.

#### A. NVO-MTOs/Transport operators

80. As a consequence of containerization, transport operators are becoming *a-modal*. They do not rely on any particular mode but integrate modal operators and other services such as container pools and EDI into complex but efficient transport chains. Such operators select a mode on the basis of performance. They are often simultaneously carriers, charterers and hirers of vehicles. They offer logistics-related services (handling, storage, warehousing, packing, labeling, invoicing, etc.) and so extend their activity beyond the transport operation itself. They increase their profits by retaining part of the value-added produced by planning and setting up the logistics systems.

81. These operators have been reconsidering the role played by each mode of transport. The *modal split* in transport planning allows each mode to be dedicated to those operations for which it has inherent advantages to perform them more efficiently. However, when offering a door-to-door transportation package, the transport operator is generally less interested in the performance of a specific mode. The approach then changes from modal split to *modal integration* or from the efficient operation of each mode to that of systems optimization. This is not to say that the efficient operation of each mode is not important, but rather that it becomes secondary to the overall system efficiency. In fact, with modal integration, the inefficiency or lower productivity of one mode may be quite acceptable if it results in proportionally greater gains over the entire system. For example, in a port where containers could be directly transferred from a vessel onto waiting wagons, it may be found that a temporary storage area, involving double handling of containers, is required to avoid excessive investment in facilities and container handling equipment or drayage costs to other rail terminals.

#### B. NVO-MTOs/Freight forwarders

82. Freight forwarders are also potential partners in assisting buyers and sellers in the development of their total distribution chain. Their industry is flexible and innovative in pursuing business opportunities as they arise. In the early days, they traditionally operated as agents in the arrangement of physical distribution requirements for shippers, without acting as carriers.<sup>21</sup> However, the diversification of services in the industry and demands from shippers for door-to-door multimodal services under fixed price contracts have changed their relationship with clients. Now, they often offer a transport contract as principals, and assume responsibility and liability for the performance of their service. They are becoming NVO-MTOs.

83. In view of the increasing number of transport operators, freight forwarders and MTOs offering multimodal transport services, the competition is keen. Indeed, as manufacturers, trading houses, shipping lines, inland carriers and freight forwarders enter the field of multimodal transport by extending their traditional services and/or by setting up NVO-MTO companies as subsidiaries, the abundance of players in the multimodal transport services increases the pressure for finding "niches" in other areas of international transport logistics such as warehouse management, inventory control and information services. This tendency has been accelerated as many major manufacturers in developed countries detach their division for logistics or physical distribution as an independent NVO-MTO which solicits both third-users' cargo and their parent company's shipments. In recent years, at least a dozen such logistics subsidiaries have been started by major transportation and distribution companies around the world. They are TDOs.

#### C. Total distribution operators (TDOs)

84. Taking advantage of the complexity of total distribution, operators have emerged offering contract logistics services to provide buyers and sellers with a flexible combination of services, not just transportation. Their services give additional value to the basic transportation, in the form of better service, greater convenience or added efficiency.

85. The prime concern of such operators is getting the job done in the best way possible for the shipper or consignee. That often means using other transportation and distribution vendors. TDOs have proved to be particularly helpful for industrial sectors such as automotive, electronics, food products, retail and consumer products. In those sectors, there are worldwide companies shipping high-

<sup>21</sup> A discussion on freight forwarders is included in document TD/B/C.4/328, para. 70-85.

value products that can go into containers. TDOs can co-ordinate the consolidation, scheduling, distribution and other activities that happen before and after shipping. They can not only provide the logistics but can also co-ordinate value-added operations including inspection, mixing, packaging, labeling, sequencing, etc.

86. TDOs are seldom interested in "shipment-by-shipment" customers. They are strictly geared up for long-term relationships. They invest a lot of effort in market research for their clients before they start moving the first container. They usually have their own internal marketing group that looks at customer needs on a global basis and they maintain two resources that are the key to logistics success: international transport expertise and computer system capabilities.

87. In order to establish such a long-term relationship, the TDO will undertake discussions with a client so as to understand his production process, determine what the TDO can do to complement it, and identify the current forces in the market place. In other words, the TDO starts by studying plant operations, production scheduling, order patterns and various transport options. The TDO then recommends appropriate long-term solutions which will provide benefits to the producer in terms of reduced inventory cost, faster transit times and improved customer satisfaction. A typical case for their intervention would be a large chemical company that is considering setting up a large industrial facility to produce a narrow range of products and distribute them worldwide. A TDO could be offered the challenge and the opportunity of managing the distribution. Other cases of TDOs' intervention cover, for example:

- (a) The expansion of existing distribution outlets (a European furniture company already established in the United States growing too fast for its existing distribution system);
- (b) The streamlining of an existing and inefficient transport chain (a large United States producer exporting a rolled cellulose product used for diapers, with specific handling problems damaging the delicate product);
- (c) The design of a new distribution system (the "reverse distribution" system required by large car manufacturers recuperating used parts for rebuilding); or,
- (d) The managing of "mixing centers" where inbound carmakers parts shipments from several sources in the Far East are combined and co-ordinated with those produced in the United States, prior to their JIT delivery to transplant assembly facilities.

88. A question might be raised regarding whether TDOs are actually performing the distribution function or only organizing it, whether they act as a *principal* or as an *agent*. Sometimes, they are clearly principals. This is the case of some Japanese TDOs, acting as NVO-MTOs, which have established distribution centres in Europe in order to provide logistics services for multinational manufacturers; they offer inventory control, order processing and deliveries to retail outlets. In other cases, their role is not clearly defined. For example, a large United States transportation corporation has developed close affiliations with major carriers in the United States, Europe and the Far East, with large warehouse companies and with leading information and communications companies. Some services are provided in their capacity as a principal, others as agent of the shipper. Finally, there are also cases in which some TDOs state clearly that they act as agent and not as carrier. In all situations, such operators play a key role in facilitating shippers'/consignees' logistics management, and thus aid in promoting international trade involving many regions. However, the question of responsibility leads to the issue of legal aspects of international physical distribution.

## VI. Legal aspects of international total distribution

89. This issue is related to the contractual relationships between the manufacturers and their potential total distribution service providers. There is no legal instrument covering international total distribution. The responsibility for the operation of such service can only be found in the legal (national or international) instruments corresponding to the various parties involved in the provision of the service.

90. Transport operators are usually bound by national legislation or regional conventions (road and rail) as well as by international conventions (sea and air). These instruments define the liability of the carrier and only cover the mode concerned. When the movement of goods requires more than one

mode of transport, a contractual relationship must be established. Such a relationship is usually guided by the recommendations on uniform rules for combined transport documents of the International Chamber of Commerce referred above.

91. The legal status of and the regulations covering domestic and international freight forwarders differ widely from country to country. Apart from ancillary services for transport such as customs broking, documentation and packaging, freight forwarders in many countries participate in multimodal, segmented and unimodal transport at international and domestic levels, in the capacity of either carrier, contracting carrier or agent for shippers. In some countries, their legal status depends on the mode of transport as well as on whether transport operators organize domestic or international transport. In other countries, their status is subject to legislation and regulation which apply irrespective of the mode of transport or the scope of services.

92. Moreover, in many countries, including some developed ones, international freight forwarders are neither defined nor regulated. Consequently they suffer from a lack of identity in their promotional and regulatory framework. Under such circumstances, the use of the words "freight forwarders" or "international freight forwarders" in the absence of internationally recognized definitions is frequently a cause of misunderstanding and confusion. A discussion on this issue appears in another UNCTAD document.<sup>22</sup>

93. The same legal context applies to TDOs. Their integrated services are guided by contractual relationships which are, in turn, based on existing national and international instruments and on commercial practices. It is therefore useful to stress the importance of the two legal instruments already mentioned, namely the ICC rules and the MT Convention.

94. In 1984, the International Chamber of Commerce (ICC) issued a set of uniform rules which lay down minimum standard conditions for contracts of carriage offered by combined transport operators. Their use provides an alternative to establishing a series of separate, non-uniform contracts for each stage of a combined transport journey. The ICC Uniform Rules are minimum standard *rules* and not standard *conditions*. As a matter of fact, some of the rules are used as such in existing transport documents, but many of them have been adapted to put them in the form of contract conditions. They are designed to facilitate relations between operators and clients, and to ensure clear understanding by bankers and insurers when they service a combined transport operation. They constitute an essential measure to avoid the commercially retrograde step of the development of a multiplicity of documents for combined transport operations. These rules are presently being revised in a joint UNCTAD/ICC effort.

95. In May 1980, the United Nations adopted a convention on international multimodal transport of goods (the MT Convention)<sup>23</sup> which will enter into force one year after the Governments of 30 countries have ratified, acceded to or approved it. Given the rate at which multilateral instruments enter into force, it could be many years before the Convention actually becomes applicable to multimodal transport operations. In the meantime, the new UNCTAD/ICC Uniform Rules on Multimodal Transport are likely to be used extensively by commerce.

96. The fact that a transport operator now issues a transport document based on the ICC Uniform Rules on Combined Transport is not a guarantee of the commercial and financial standing of such an operator. It only attests to the commercial willingness -or commercial unwillingness- particularly by the banks to regard this document as a worthwhile document and the prevailing transport regulations which will give the shipper some protection.

97. There have been cases in which the issuer of a door-to-door combined transport document was acting as a principal on a portion of the transport chain, and as an agent for the shipper on the rest. The shipper must be well aware of when and where such a transport operator changes from principal to agent. Reading all the clauses of the combined transport document might not be enough since these clauses might refer to situations specific to certain trade routes and, most likely, unknown to the shipper. For example, one of the clauses of a combined transport document was worded as follows:

"If the carriage called for by this Bill of Lading is Combined Transport, then the Carrier undertakes to perform and/or in his own name procure performance of the Combined Transport and, save as otherwise

<sup>22</sup> *Developments in multimodal transport*, TD/B/C.4/328, UNCTAD, Geneva, 1990.

<sup>23</sup> *United Nations Conference on a Convention on International Multimodal Transport*, Volume I, Final Act and Convention on International Multimodal Transport of Goods (TD/MT/CONF/17), United Nations Publication Sales No.E.81.II.D.7 (Vol. I), United Nations, New York, 1981.

provided in this Bill of Lading, the Carrier shall be liable for loss or damage occurring during Carriage to the extent set out below, provided that when receipt and custody operations before loading, or custody and delivery operations after discharge are carried out by a public or semi public or monopolistic organism, then the Carrier's liability will be governed like in clause (5) Port to Port Shipment and in such case the Carrier will act as *forwarding agent only* as concerns precarriage and/or on carriage."<sup>24</sup>

Considering that in most developing countries transport operators such as ports, stevedores or railways are generally public, semi public or monopolistic, this type of transport document becomes nothing more than a so-called "intermodal bill of lading" with the issuer of the bill of lading taking the responsibility only for the ocean leg, without the shipper noticing it.

98. Aware of the subtle but important difference in liability between transport services providers acting as principal or as agent, the shipper may therefore choose among a number of options to organize the physical distribution. He must realize that today's NVO-MTOs and TDOs are not the same as forwarders from the conventional era. They can serve as very useful connecting links particularly because shippers are generally not big in all trades to negotiate to their advantage transport rates with major carriers and because, often precisely in those trades where their cargo volume is not so big, they have to try to sell their goods against very keen competition. NVO-MTOs and TDOs have very well understood that any single "straight-jacket" service cannot satisfy the needs of all shippers and all kinds of cargo. NVOCCs and TDOs are now offering new possibilities tailored to the specific operational and legal requirements of each shipper.

99. Having underlined the legal issues of total distribution, one might question the need to use multimodal transport when developing a distribution strategy, instead of dealing with individual modal operators in a segmented transport operation.

## VII. Does multimodal transport serve total distribution?

100. Many shippers prefer not to be bound to a single carrier or by conference carriers in order to use services of different quality and prices depending on their requirements. When looking for an international door-to-door multimodal transport service, a shipper reported that he was using a conference carrier, which did an outstanding job on service, documentation and communications, but only occasionally since it was more expensive. This shipper also reported that he had agreements with non-conference carriers and NVO-MTOs which lacked the inland infrastructure, in order to control the inland movement of the containers more effectively himself.<sup>25</sup>

101. Thus, multimodal transport services are not necessarily a panacea for all shippers. What should be important for shippers is that there should always be freedom and opportunities to negotiate and choose the most appropriate services among many alternatives. Shippers' options may change depending on various factors, not only on shipments but also on their logistics requirements. According to a survey done in the United States,<sup>26</sup> about 42 per cent of 1,000 shippers approached preferred *single factor door-to-door rates under multimodal transport*, while about 45 per cent preferred *shipper-arranged inland transportation*; the rest had no preference.

102. The reasons cited for preferring single factor door-to-door rates are listed below:

- Lowers overall freight costs;
- Avoids using forwarder or customs broker;
- Makes it easier for overseas trading partner;
- Avoids confusion of measurement and weight rates;
- Lowers insurance costs;
- Simplifies insurance procedures;
- Eliminates questions of liability for loss and damage;
- Improves co-ordination;
- Eases tracing of lost shipments;
- Avoids detention charges on containers;
- Provides better control over costs;

<sup>24</sup> Emphasis added.

<sup>25</sup> *Proceedings of Annual Meeting*, September 1987, Vol I, Council of Logistics Management, Oak Brook, United States, 1987, p. 366.

<sup>26</sup> "Single-factor through rates vs. shipper-arranged inland transportation", PRC Engineering Research News, Vol. XX, London, August 1985.

- Expedites customs clearance; and,
- Improves transit time.

103. The following reasons were cited by shippers for preferring to arrange inland transport themselves:

- Provides better control over service;
- Eases preference to use own forwarder or customs broker;
- Obtains lower cost by dealing with inland carrier;
- Can reward inland carriers which serve the shipper best;
- Wants own representative at ports;
- Allows shipper to use own truck fleet to or from ports;
- Allows shipper to prioritize inland movements;
- Conference rate increases would also apply to inland portion of single factor rates;
- Allows shipper to consolidate exports from more than one plant;
- Allows shipper to divert imports to other inland destinations; and,
- Some shippers can deal with inland carrier better than VO-MTOs can.

104. Although segmented transport is generally used in most trades, in particular with developing countries, it has been observed that multimodal transport operations from Japan to inland points in the United States increased from 15.9 per cent in the year 1980 to 36.3 per cent in 1985.<sup>27</sup> A slight decline of such operations in 1986 was attributed to switching of multimodal arrangements to segmented arrangements by a big auto maker who had successfully negotiated a better service contract directly with the connecting railway. This was a typical case when a large-volume shipper had exerted his negotiating power to achieve optimum logistics arrangements.

105. Although the reasons presented by shippers for preferring to arrange inland transportation are valid, not all potential users of total distribution services are in a position to negotiate the various transport and service contracts implied by such attitude. These users might feel more comfortable calling upon TDOs who will optimize multimodal transport advantages.

## VIII. From containerization to total distribution in developing countries

106. Modern cargo-handling systems based on containers have brought about a quantum leap in productivity all along the transport chain. Containers remain the fundamental element of new transport services which have become more sophisticated, flexible and efficient than was possible before containerization. However, in this connection, developing countries are facing structural problems which are hindering their access to the possible benefits of door-to-door transport.

107. According to a survey carried out by the UNCTAD secretariat, the following situations were cited as presenting negative factors which render the introduction of modern transport technology difficult in developing countries:<sup>28</sup>

- (a) Inadequate transport infrastructure;
- (b) Non-availability of investments;
- (c) Lack of expertise and qualified operators;
- (d) Lack of necessary information for officials concerned;
- (e) Inadequate legislation such as Customs regulations; and,
- (f) Unbalanced flows of container traffic.

108. These were later confirmed when the UNCTAD secretariat undertook case studies of the situation of containerization and multimodal transport in Senegal, Zambia, the United Republic of Tanzania, China, Bolivia and Peru.<sup>29</sup> Although these studies are becoming somewhat out-dated, regular technical assistance activities show that the conclusions remain valid.

<sup>27</sup> *Japan Physical Distribution Yearbook 1987*, Tokyo, 1987, p. 78.

<sup>28</sup> *National policy measures concerning multimodal transport operations and containerization* (TD/B/C.4/278), Report by the UNCTAD secretariat, Geneva.

<sup>29</sup> *Adaptation to multimodal transport and containerization in developing countries* (TD/B/C.4/274), Report by the UNCTAD secretariat, Geneva, 1984.

109. In particular, the studies stress that shippers in developing countries are, for the moment, not so concerned as those in developed countries over logistics and total distribution management. This is so because of many factors, including lack of awareness of the importance of logistics management, lack of interest in logistics in the absence of competition or only limited competition and also because export contracts are mainly based on ex-works or fob sale contracts at the most. However, as stated previously, freight forwarders of developed countries acting on behalf of importers in their countries are active in developing countries in receiving and consolidating cargo from different sources in these countries before overseas shipment. This suggests that potential fields of activities for indigenous MTOs in respect of shippers' logistical requirements could be substantial and promising for the future.

110. International transport companies from developed countries often hold an overwhelmingly dominant position in many developing countries. In addition to the above mentioned reasons, this situation results from a lack of expertise on how to undertake multimodal transport and the lack of a legal régime to help the development of an indigenous multimodal transport industry. This gives MTOs from developed countries the opportunity to take all the risks but also pocket the profits. With multimodal transport becoming the prevailing method to transport containers throughout the world, this situation may lead the transport industry in developing countries to be relegated to its "traditional" rôle of sub-contractor of foreign transport companies. It may result in little or no transfer of the new technology to the developing countries, and hence no fair share in the profits and associated advantages of multimodal transport. The technology gap will widen yet again, as the latest development in door-to-door transport, *total distribution*, tends to demonstrate.

111. As markets in developed countries continue to become more and more sophisticated, commercial parties will increasingly insist on the utilization of carriers that can offer total distribution services. For example, if a shipper from a developing country is not capable of matching the importer's requirements of timely delivery of products, that shipper is likely to lose the business. The reason for this is that modern distribution requirements and the needs for economies of scale may force an importer in a developed country to change supplier rather than to rely on erratic sourcing. A supplier from a developing country might not have a choice of carrier, e.g. because of national cargo reservation law. If the obligatory national carrier has no sailing date corresponding to the importer's tight production schedule, the importer may be forced to change to a supplier from another country where the same constraints are not imposed.

112. It seems that, in many developing countries, such a situation often prevails. Competition in the domestic market is limited by government regulations or by monopoly of state-owned enterprises and, consequently, manufacturers are not especially keen to engage in logistics management. However, if industries in developing countries intend to export their products, they may be exposed to fierce competition in the international market, and will be obliged to consider international logistics management more seriously, in view of customer requirements. Thus, the governments of developing countries may wish to examine their national transport/trade policies and regulations in the light of shippers' requirements for international logistics management.

## Chapter 3

### SET-UP OF A TOTAL DISTRIBUTION CHAIN

113. With the development of containerization and EDI technologies, transport equipment and commercial transactions are becoming increasingly standardized and harmonized. However, total distribution services are not everywhere similar or uniform. Diversity is the rule. Buyers and sellers can today obtain a service tailored to their specific needs.

114. Manufacturers and intermediaries are daily faced with the problem of supplying their customers with their products, using the best available distribution conditions. This requires a combination of marketing strategy and transport knowledge. It has been mentioned earlier that different goods require different distribution strategies so as to reach consumers at the most competitive price. Price includes transport cost. To determine the most appropriate transport cost, buyers and sellers must be able to integrate a quantity of information on available transport services satisfying their particular trade, packing techniques and distribution/warehousing strategies, as well as documentary/liability considerations. For assistance, they might rely on transport operators who will take care of those considerations. This requires a close relationship between buyers/sellers and transport operators so that the transport services can fit properly the buyers/sellers' needs.

#### I. Basic needs in setting-up a total distribution chain

115. In order to get a clear picture of their own needs, buyers/sellers must analyse the three basic phases required in setting up a total distribution chain:

- (a) The **first phase** deals with the preliminary studies covering the transport mode, means and equipment<sup>30</sup> required to transport the product, a precise estimation of the costs involved, and the responsibilities to be established with the various parties involved in the movement from origin to destination. In particular, the buyer/seller will have to determine which trade term (INCOTERM<sup>31</sup>) fits best his commercial transaction.
- (b) The **second phase** is the performance of the transport operation itself and covers the preparation of the shipment and its transport. It includes packing, handling, storage, stuffing, as well as all the administrative matters related to the shipment: order, invoice, receipt, Customs and transport documents, etc.
- (c) The **third phase** covers the organization, follow-up and control of the various operations at destination such as: unloading, de-stuffing, Customs arrangements, transport, delivery, claims, etc.

116. Buyers/sellers should be familiar with the inherent characteristics of the various transport options (physical constraints, tariffs, routes), as well as with the transport contract implications (conditions, responsibilities, delay). This is particularly important if they wish to control the total distribution chain, in which case they will have to integrate into their total cost the costs of transport,

<sup>30</sup> To set out what is meant by mode, means and equipment of transport may be useful. The following are three simple, yet essential definitions:

|                               |                                                                                             |
|-------------------------------|---------------------------------------------------------------------------------------------|
| <i>Mode of transport</i>      | the method of transport used for the conveyance of goods or persons, eg. rail, road or sea. |
| <i>Means of transport</i>     | the vehicle used for transport of goods or passengers, eg. aircraft, truck, vessel.         |
| <i>Equipment of transport</i> | material used in the transport process, eg. pallets, containers, unit load devices (ULDs).  |

<sup>31</sup> The International Chamber of Commerce (ICC) has published in 1980 a detailed description of 14 trade terms defining the respective rights and duties of the seller and the buyer with regards to transport and documentation in the context of an international sales contract (Publication ICC No.350). ICC is currently revising this document. A new version will be issued in 1990 (Publication ICC No.460).

handling, storage, agents' commissions, etc. They will also have to take into account the implications of possible delays as a result of their clients' changing instructions, their own production lines, or problems related to the financing of their commercial transactions. Such delays can entrain penalties, insurance premium increases, possible damage to the shipment, etc.

117. The monitoring of these problems presents organizational and legal issues. The buyer/seller may develop an integrated strategy for total distribution or may delegate a third party to handle all or part of this problem. In some cases, a buyer/seller (or a group of buyers/sellers) might choose to integrate total distribution into the production strategy (the "do-it-yourself" approach). In other cases, such a decision will be guided by the need for long-term relationships between buyers/sellers and transport service providers in order to improve quality of the distribution process and reduce its costs (the "farm-it-out" approach). The search for the best-suited partners then becomes important.

## II. Do-it-yourself or farm-it-out

118. Buyers/sellers must first decide whether they want to manage their total distribution operation themselves or whether they are ready to let the providers of services do it. A decision will depend on factors such as:

- Actual commercial practices;
- Shipper's organization;
- Size of the company;
- Availability of transport means and equipment;
- Share of transport-related costs in the company's total expenditures;
- Share of transport cost in the selling price of the product;
- Total volume of goods transported;
- Flow regularity; and,
- Quality of available providers of services.

119. Regarding these factors, shippers of similar commodities or goods might find appropriate to pool their shipments in order to improve their marketing and distribution strategies, increase their negotiating power and reduce distribution costs. In this process, they must be aware of the characteristics and marketing constraints inherent in their products. The transport operation related to each commodity has its own characteristics; hence it is necessary to select an organizational arrangement suited to the operation, taking into account every phase of the movement from original producer to ultimate consumer. Such pooling of the total distribution operation will require the creation of organizational arrangements. This compels shippers to consider the following issues:

- (a) Are the producers of a given commodity also the shippers? If not, the organizational aspects will be quite complex: co-ordination will be needed not only among shippers but also among suppliers, and between suppliers and shippers;
- (b) How many firms are involved? If the entire commodity trade is in the hands of four or five companies, they may be able to co-ordinate their activities satisfactorily on the basis of a gentleman's agreement. However, if two or three hundred firms are involved, more formal arrangements will be needed;
- (c) Will the change in distribution methods as a result of pooling be accompanied by a change in handling and storage methods, or by a need to provide intermediate warehousing facilities either at the shipping end or at the receiving end of the trade? If so, capital investments might be required. Such investments would probably be beyond the means of individual shippers and may call for the setting up of a co-operative venture or a government agency; and,
- (d) Would shipments of aggregated consignments be consistent with existing market procedures and practices, and especially with the maintenance of competition between the various exporters whose consignments would be aggregated? In some trade, it has been found possible to aggregate consignments without disturbing existing marketing practices. In others, it may be impossible to change shipping methods without also making certain changes, perhaps fundamental ones, in marketing practices.

### III. Contractual relationships in a commercial transaction

120. Before going further in identifying and selecting a suitable MTO/TDO, the buyer/seller must bear in mind the basic contractual relationships which have been established as a consequence of a trade transaction. They can be grouped into three categories:

- (a) *The contractual relationship between the seller and the buyer regarding the product being sold and the corresponding commercial conditions, including those which determine the respective responsibilities of both parties with respect to the co-ordination of the physical distribution operation.* This relationship is usually specified in the contract of sale. In addition to the information relating to the commercial transaction, the contract of sale must include a section on transport. This section defines clearly the obligations of the seller and the buyer. It specifies where the goods must be delivered by the seller or where the buyer will pick them up. The appropriate INCOTERM must be used in each case.
- (b) *The contractual relationship between the seller (or the buyer) and the transport operator who performs the total distribution operation.* There is no internationally recognized legal instrument governing such a relationship. For a specific door-to-door transport operation, commercial practice up to now has been based on the work of ICC. Various types of transport documents have been developed but there is a lack of uniformity and a need for harmonization. Once in force, the MT Convention will contribute to such uniformity and harmonization. Until then, in order to establish a total distribution service, both the shipper and the transport operator may decide to negotiate a contract which might be quite simple or more elaborate, depending on the importance (in terms of quantity, volume or value) of the operations to be performed over a given period. Such contracts might cover special arrangements regarding the quality and availability of transport, handling and storage facilities, as well as the information management capacity of the MTO/TDO. Standard trading conditions offered by the MTO/TDO might be included in the contract, if the parties so wish.

For a "one-shot" operation, as in the case of distributing Beaujolais nouveau each year (see para. 124 and footnote 32), the contract may be quite simple if the buyer/seller has his own warehouses and distribution network overseas. Then, the contract with the transport operator might only cover transport and Customs operations. Such a contract might very well be in the form of a combined/multimodal transport document and might be issued for each shipment. If the buyer/seller needs to rely on the transport operator to get full physical distribution services, particularly when such services are required on a regular basis, a transport logistics contract will have to be negotiated. It should define all the details about the service to be provided by the MTO/TDO and specify the responsibilities regarding the performance of the services. This aspect will be discussed later.

Under such complex contracts, the buyer/seller and the MTO/TDO will have to negotiate the remuneration of the services provided. Such remuneration might be based on:

- (i) effective costs plus a flat fee;
- (ii) effective costs plus handling charges to be negotiated; or,
- (iii) other criteria.

In the first case, a flat fee might be established for a given period and might include the operator's profits and cover the overhead to maintain a determined number of staff fully available to the shipper. In the second case, the handling charges would be calculated on the basis of the effective work done by the MTO/TDO, according to agreed tariff rules and conditions. The selection will depend on the commercial practices of the trade and on the parties involved.

- (c) *The contractual relationship between the MTO/TDO and the actual carriers (and other intermediaries) who perform the transport, handling and storage functions included in the total distribution service.* When an MTO/TDO has been engaged by the shipper to handle the total distribution process, this operator becomes the shipper or principal with respect to the actual carriers and other intermediaries. The MTO/TDO will be party to the specific

transport contracts signed with such carriers and/or intermediaries. Each transport contract is then governed by the applicable national or international regulations.

#### IV. Steps towards a selection process

121. Once the buyer and the seller have established their commercial transaction, they have agreed on a particular INCOTERM which fully defines who is responsible for the arrangements concerning payment of the costs and insurance of the risks regarding the transport operation of moving the goods from the seller's premises to the buyer's. The buyer or the seller then becomes a potential consignee or shipper at the time he negotiates with a transport operator to perform the movement of the goods. From then on, it is assumed that the shipper is responsible for negotiating with the transport operator.

##### A. Preliminary considerations

122. There is a set of basic considerations which the shipper must take into account when he approaches potential service providers. In particular, he must realize that transport is not "goods", but a "service". As such, it cannot of course be stocked for later use. This means that the price quotation given today for a given transport service might be higher in two-months time, for example. Hence favourable quotations for small, unplanned, or spot shipments are more difficult to negotiate than regular shipments of goods which might constitute a "working basis" for the contracting and/or the actual carrier. Spot shipments are greatly affected by opportunity costs, according to the transport flow economics of the selected geographical area. Regular shipments of goods generally benefit from negotiated and favourable tariff conditions. Flow regularity allows the transport operator to provide higher quality service in the form of pick up at fixed dates (and possibly at agreed hours), guarantees of loading, and time-efficient pre-programming of documentary formalities. Such customer-tailored details define a "comfort" option as a valuable alternative to a "tariff" option.

123. In establishing a commercial relationship, the shipper and the service providers must therefore agree on the quality of the services to be provided. Such quality will depend on:

- (a) Reliability, regularity and flexibility in providing the service;
- (b) The speed and frequency of its performance;
- (c) Goods security; and,
- (d) The related information services which, for example, can provide shippers with knowledge about the status of the service and the estimated time of arrival (ETA) of the goods at a destination.

124. In this context, particular attention should be paid to time of delivery, mode used and cost of the service offered. *Time* is a key criterion. Delays must be monitored and their implications evaluated. The question might therefore be raised as to whether it is economically meaningful to guarantee a three-day delivery when, in any case, the goods will have to wait in a warehouse, or when the Customs procedures and formalities might take a "given" time, by definition unknown and uncontrollable. Is a short transit time preferable to a guaranteed delivery? It depends. Moreover, "guaranteed delivery" must be clearly defined. Such considerations might open new possibilities for competitiveness between road and air, or air and sea on certain trade routes. In some cases, a slower, cheaper but reliable transport alternative might be preferred. The relevance of time in international transport is closely related to the nature of the goods and to how urgently they are needed. When applicable, this factor should be measured and compared to the high transport cost it usually implies, in order to determine whether or not the time-cost trade-off alters the competitiveness of any given product.<sup>32</sup>

125. The main *mode of transport* used is also an important criterion. As mentioned earlier, the decision regarding the choice of this main mode must be left to the MTO/TDO who is handling the total distribution operation. However, the selection must be the outcome of consultation between the ship-

<sup>32</sup> An interesting example of such trade-off is the once-a-year challenge of worldwide distribution, from France, of millions of bottles of the well-known wine "Beaujolais nouveau" within 48 to 72 hours. See *Beaujolais nouveau: la mode sur tous les modes*, *Journal de la Marine Marchande*, Paris, 17 November 1989, pp. 2867-2870.

per and the MTO/TDO, because the main mode of transport will impose its own restrictions on speed, packing and insurance. For a specific destination, a mode will dominate on the basis of transit time or freight rate. However, there might be situations when the goods impose the use of a particular mode. In such cases, once the choice is made, benefits might accrue from an appropriate analysis of the packing required. A well-prepared crate or container loading/stuffing plan, established well in advance, might give marketing agents unexpected selling opportunities by making optimized use of the overall volume of the unit load. The shipper should also take into account that the actual date of loading the goods on the main transport mode might be as important as the transit time to destination when the frequency of departures is low. Missing the date of loading might affect total transit time, particularly when no alternate transport option is available.

126. A third important criterion is the *cost of transport* which is very much related to the modal criterion. The share of the transport cost in the delivered price of a product is often considered as too high. However, transport cannot be avoided and good-quality transport operations are valuable assets in the context of long-term commercial transactions. A sale transaction resulting in goods being delivered at their destination in bad condition because of inappropriate transport arrangements is surely not a glorious deal. The client remains unsatisfied and a market opportunity might be lost, in spite of the best insurance coverage. Price therefore becomes a very subjective matter and service quality an obligation.

127. The cost of transport deserves particular attention. Transport being a service, many factors comprise its cost. Some cost elements are mandatory: each time cargo is handled, costs automatically arise for labour, power, fuel, etc. Other costs are the outcome of past policy decisions or local regulations on the operation of the service. Such policy decisions or regulations might, for example, preclude using the most efficient means to provide the service. True transport costs are seldom quantifiable as they are hidden by extra costs arising from bad or weak management. However, to search for and refine the cost of operations to a degree that reflects "true" cost would almost certainly give rise to greater expenditures than the savings which could be generated from the refinements.

128. Both the shipper and the MTO/TDO therefore face the challenge of improving management and reducing costs. They must collaborate in order to develop technically sound, cost-efficient transport and distribution alternatives. It is appropriate to mention here that the International Trade Centre has developed an interesting approach to carry out a distribution cost analysis for specific commodities with the objective of improving price competitiveness of export and import products.<sup>33</sup> This approach provides a practical tool for a shipper to investigate both direct and indirect distribution costs, and to negotiate with service providers specific actions in order to reduce such costs. Some of these actions are presented below.

#### (1) *Reduction of direct distribution costs*

129. An appropriate distribution strategy may lead to valuable direct cost reductions. The partners should therefore carry out a series of important analyses to shape the most suitable distribution strategy. These analyses would cover, *inter alia*, the following issues:<sup>34</sup>

- Existing and new packaging materials and methods;
- Type of material for pallets (plastic, wood, etc.);
- Use of non-disposable *versus* disposable containers;
- Purchased *versus* leased containers;
- Storage in public warehouses *versus* private warehouses;
- Tariff rates per voyage *versus* tariff rates per period of time;
- Use of full or part charter services; and,
- Key factors affecting the cost of the insurance premium;

130. The partners should also design adequately their operations and investigate the following:

- Most effective use of the transport equipment capacity, taking into account the effect of the weight/volume relationship on tariffs;
- Alternative transport routings to avoid intermediate warehousing and reduce the number of modes used;

<sup>33</sup> *Selection of an international physical distribution chain* (ITC/INF/50), ITC, Geneva, January 1989.

<sup>34</sup> *Practical innovations after a choice of a mode of transport*, prepared by OLA/DTC/ITC, Geneva, 1985.

- Possibility of cargo consolidation;<sup>35</sup>
- Appropriate unitization of cargo (palletization, containerization) based on ISO (International Organization for Standardization) containers, pallets and ULDs; and,
- Margins of negotiability in transport rates and insurance premiums.

## *(2). Reduction of indirect distribution costs*

131. Although administrative and capital indirect costs are more difficult to assess, they should be given particular attention. Questions should constantly be asked concerning the introduction of new management techniques (use of modern computer and communication facilities) and the emergence of new channels of distribution. These techniques facilitate the fast delivery of goods to customers. They can potentially reduce the total distribution time and therefore reduce financial costs.

### *B. What type of service should a shipper select?*

132. Transport operators can serve as vital logistics partners for small-sized to mid-sized companies that need help in handling their international distribution. They can become an integral part of a company's overseas strategy, provided the shipper can distinguish between a reputable operator and fly-by-night competitors. Many neophyte shippers confuse NVO-MTOs with freight forwarders. A well-organized, financially stable NVO-MTO can help shippers overcome distribution problems, but shady NVO-MTOs with no visible means of support might leave cargo stranded anywhere.

133. Therefore, the shipper must take a decision regarding the type of services needed. He might wish to get assistance and advice on how to establish his distribution chain or on how to improve the chain he is presently using. Alternatively, he might want to turn his distribution system over to an operator who would run it for him. In the first case, a TDO could fulfil the assignment by organizing the best suited distribution chain and suggesting appropriate MTOs or transport operators to perform the transport operation. In the second case, an MTO would be the right person since he will be able not only to organize but also to take responsibility for the satisfactory performance of the distribution chain. In both cases, the shipper will have to make sure that the MTO or TDO selected has a sound financial and organizational set-up, and is capable of managing the operations through a computer-based system.

134. The extent of financial investment required for a TDO will depend upon his involvement as MTO, the type of transport technology adopted for multimodal transport operations and the scale of its application. Since a TDO might act as principal and also as an MTO, he may have to engage several unimodal carriers. It is consequently essential that his financial standing be sufficiently strong to command the confidence and goodwill of his sub-contractors. If the TDO accepts responsibility for the transport, he then needs to be covered by adequate liability insurance, like an MTO would be.

135. The MTO/TDO should have a suitable organizational set-up, both in his own country and in foreign countries, to look after his business. In his own country, the MTO/TDO may have to establish, besides a head office, subsidiaries or branch offices or agents at different places, depending upon the extent of the business and the range of services rendered. Abroad, he will have to establish a network of agents/correspondents and, if necessary, subsidiaries and branch offices, depending again upon the extent of his business.

136. The importance of electronic data processing, EDI and communication facilities is increasing for MTOs and TDOs, as the efficiency and capacity of computers increase year by year and costs drop. New software has been introduced by MTOs/TDOs for the purpose of calculating freight rates and charges, printing and transferring shipping documents, and sending information to Customs. This stands apart from computer use for administrative and accounting purposes. Such data and communication systems are replacing traditional paper-filing systems; they also enable MTOs/TDOs to operate

<sup>35</sup> Consolidation means the collection by an MTO/carrier of smaller consignments of goods to form a larger consignment for shipment by container in accordance with instructions from the merchant, for carriage as an entire container load. In some trades, "consolidation" is called "groupage". This definition is included in the final report of the meeting of the group of experts to develop and recommend model rules for multimodal container tariffs (TD/B/C.4/308, UNCTAD, Geneva, February 1987).

with less staff than otherwise required. This means increased productivity, better services and even additional services which otherwise could not be provided. An NVO-MTO with staff totaling about 400 at head office, which had introduced sophisticated information systems, indicated that it might have required more than a thousand staff members had the new systems not been adopted. Since such an increase would probably have resulted in overheads becoming much too high, it may be inferred that these new technologies have allowed the MTO to improve the level of service to clients.

## V. A possible procedure to select an MTO

137. To select a suitable partner for a total distribution chain, the shipper might consider the following check list of steps:

- (a) Obtain a list of the potential MTOs offering services in the shipper's specific trade, or get the name of an MTO from another company using similar services. The shipper must be careful, since another company's requirements may be different;
- (b) Provide the candidate MTOs with the following information: type of product to be exported, packaging (pallet, skid, etc.), origin shipping location, overseas destinations, average weight and frequency of shipments;<sup>36</sup>
- (c) In return, request the following information from each of the candidate MTOs:
  - (i) in case of LCL shipments: availability of warehouses that can be used if a need arises, availability of consolidation services to the desired destination as well as rates and frequency of departures. If no consolidation service is available, current door-to-door transport rate to the destination; and,
  - (ii) in case of FCL shipments: capability to manage the throughput of the containers from the shipping location to the destination. Transportation costs must show those from origin to destination. Availability of MTO/TDO's representative overseas to handle the container upon discharge and forward the shipment to the customer.
- (d) Request a current customer list. Call a number of those customers and verify each MTO's performance record;
- (e) Ask for credit references in the same manner as one would do with any other company before dealing with it. Information should be obtained in writing before starting the selection process. Check the credit references of the MTO before engaging in dealings with the company as this might save problems later on. Indeed, it is easier to have the MTO advance all duty and Customs charges and then bill the shipper for these charges. This saves the shipper advance payment of these fees before the shipment can be released. Moreover, this procedure saves administrative costs since the shipper pays only one invoice; and,
- (f) Check the information management capacity of the candidate MTO. Has he a tracking system that can be tied into the shipper's computer so that both can do the checking? Or must the shipper call the local MTO's office for this information?

138. If MT air transport is a viable alternative in the total distribution chain, the MTO should be able to arrange for air transport from an airport as close to the shipping location as possible and move the shipment as close as possible to the overseas customer's geographic location. Proximity is important because it means faster delivery. The MTO should at any time be able to provide the shipper with information on the exact location of his cargo, as well as with flight details. The MTO should also be able to provide confirmed, not only booked, flight information. Therefore, one important selection criterion is whether the MTO can provide rapid confirmed flight information.

139. When the organization contracting for transport services is a consignee, additional difficulties might arise, such as: Government controls (quotas, trade barriers), Customs duties and clearance,

<sup>36</sup> Annex III provides an example of such steps of a selection process based on quotations from transport operators on specific shipment operations.

currency value fluctuations and exchange rates, paperwork and documentation, negotiation difficulties, culture, etc. The consignee should not try to overcome these difficulties himself, since any money which might be saved in a self-administered programme could very well be lost on one improper import. The MTO to be selected must therefore offer the services of a licensed Customs agent (also called "Customs-broker"). Hence the following issues should be considered:

- (a) Does the MTO have a warehouse where the imported goods could be held after they've been Customs cleared, or a bonded facility where a shipment may be placed pending Customs clearance, if necessary; and,
- (b) Does the MTO have an EDI system which is connected with Customs? Such an EDI system should allow the MTO to interface with Customs for pre-clearance of imports (prior to entry into the country). This facility saves valuable time since there is no need to wait for a shipment's arrival in the country before clearing it through Customs. The release of the cargo under this system takes minutes instead of days (nevertheless, after general examination of an entry, Customs may require an inspection).

140. In his Customs-broker function, the MTO is usually authorized to act on the shipper's behalf on all import transactions but this does not shield the shipper from errors made by the MTO. Customs can impose penalties for errors that may far exceed savings accrued from using a "discount" MTO.

141. Another important factor in the selection process is the personal attention given to the shipper's account by the MTO. The daily routine of shipping goods is generally not handled by the manager of the MTO, but by one or more employees. Likewise, the shipper will most likely delegate the shipping operation to an individual in his office. The best MTO then is no better than the individual who handles the shipper's account and works on a daily basis with the shipper's personnel. This is particularly true for the import clerk working with Customs on the buyer's behalf. Performance failures of this specialist can have a dramatic impact on the buyer, either in terms of lost time on the import or by costing his company unexpected additional expenses. Frequent checks should therefore be made of the persons working with the MTO to evaluate their performance.<sup>37</sup>

## VI. Planning and co-ordination of the total distribution operations

142. Once the shipper has selected his transport partner, he will then have to establish a formal contractual relationship with the selected MTO/TDO. The performance of this contract will require appropriate planning and co-ordination of the various operations and procedures involved in the total distribution.

143. Planning of the set-up of a total distribution chain for consumer goods must take into account manufacturing constraints, market trends, delays in transport and Customs operations, as well as possible unexpected local conditions. The necessity of possible modifications in the design of the distribution system or in the scheduling of the production according to specific demand makes the process of distribution and the corresponding planning a delicate task, particularly when the contract for total distribution services includes a penalty clause for delays in delivering the goods at the designated locations.

144. The contract between the shipper and the MTO/TDO will therefore have to specify all information necessary to perform adequately the distribution service. Such specifications could be assembled into a formal reference document. A possible table of contents for such a document is presented in Annex IV. This document should be part of the contract and include, *inter alia*:

- (a) The names, addresses, telephone numbers, telex numbers and fax numbers of:
  - (i) The manufacturer;
  - (ii) The representatives of the manufacturer at destination;
  - (iii) The suppliers and/or manufacturers, with specific designation of the sites (factory, warehouse, platform) where the goods will be picked up;

<sup>37</sup> See *Managing International Transportation, Distribution*, Radnor, United States, October 1988.

- (iv) The various warehouses and platforms used for storage and distribution;
  - (v) The TDO, with the name of the employee(s) specifically designated to handle this contract;
  - (vi) The transport operators and/or carriers;
  - (vii) The Customs brokers;
  - (viii) The Customs offices involved in the physical distribution system;
  - (ix) The representatives of the insurance company of the manufacturer; and,
  - (x) Any other party involved in the total distribution system;
- (b) Full details regarding:
- (i) The general description of the goods manufactured by the shipper;
  - (ii) The detailed description of the components of each type of goods, by main component; by sub-components; by physical units; by weight and volume; by number of packages for each type of goods, etc.;
  - (iii) The availability of each type of goods, and the agreed dates for pick-up at the designated sites;
  - (iv) The schedule of delivery dates;
  - (v) The destinations, including:
    - (a) specific locations, addresses, numbers of phones, telexes and faxes;
    - (b) names of responsible representatives;
    - (c) access routes and infrastructure constraints;
    - (d) physical constraints (height, width, length) at the selected sites of delivery; and,
    - (e) availability and capacity of handling equipment at those sites; and,
  - (vi) The official holidays in the countries concerned (origin, transit, destination).

145. In order to avoid the consequences of unrealistic planning of the total distribution operations, the shipper and the MTO/TDO will have to analyse jointly the schedule of production and availability of the goods as well as the schedule for delivery within the specified period. These are the basic inputs for planning the operations. They will allow for the determination of the transport means to be used given the time limits including adequate spare time to cope with unexpected problems and possible delays which might occur along the route. They will serve as a negotiating basis for the MTO/TDO in his process of sub-contracting actual carriers and arranging storage and handling facilities. They will also allow the MTO/TDO to consider alternative means of transport in case anything happens at a given stage of the distribution process. Finally, these schedules must be dynamic and open to complete revision should unexpected technical difficulties occur. The MTO/TDO then becomes responsible for updating such schedules, together with the shipper, but must also co-ordinate the operations among the various parties involved.

146. The preparation of these schedules will make it possible to gather and combine all the elements necessary for the planning and control of the entire flow of goods on the basis of the production and availability programme and the delivery programme. The schedules will summarize the on-going production, availability, expected delivery dates, and all the details concerning the flow of goods including orders, shipping instructions, shipping notes, etc.

147. The MTO/TDO will have to analyse with the shipper the logistics co-ordination of his production. The MTO/TDO might suggest the establishment of buffer stocks along the distribution chain. Such buffer stocks will have to be supplied in sufficient quantities to cope with demand, using the most appropriate means of transport. A detailed inventory showing the minimum level of stock required by each distribution centres will have to be maintained by the MTO/TDO and supply will automatically take place when the quantity available reaches the threshold level.

## VII. Another important issue: insurance coverage

148. Parties to an international transaction must protect themselves against loss or damage. Furthermore, the carriers must protect themselves against liability claims from the cargo owner. There are consequently two basic types of insurance, cargo insurance and liability insurance. Cargo owners must take out cargo insurance and carriers must take out liability insurance.

### *A. Cargo insurance*

149. Although the carrier has a certain liability to protect the cargo in his care, there are often various exemptions which, particularly in ocean transport, may mean that even though the cargo might have been damaged while in the care of the carrier, the carrier is not liable. Even in cases when the carrier is liable, the limits of liability are often so low that they fail to compensate the cargo owner for his loss. For this reason it is also necessary for the cargo owner to take out suitable insurance cover. In the event of a loss, the policy holder turns to the cargo insurer and, provided damage or loss can be proven, the insurer will pay up to the agreed limit.

150. Several types of covers can be obtained on the insurance market from the very minimum, e.g. the "Institute Cargo Clauses" whose lowest level is known as the "C clauses". Slightly better protection is obtained through the "B clauses" while the best cover follows from the "A clauses". But even the "A clauses" (the old "All risk" cover, does not insure against all risks. War risk and labour strikes are, for example, not covered under the "A clauses" although they can be covered through separate clauses, which then cost extra. Developing countries should be aware that with the UNCTAD Model Clauses on Marine Hull and Cargo Insurance it is now possible for the insurance markets in developing countries to prepare their own standard clauses taking account of local underwriting practices and domestic law and using the UNCTAD model clauses as a basis.

### *B. Carrier liability insurance*

151. Land-based carriers use "normal" insurance companies to obtain their liability cover. Ocean carriers, on the other hand, have traditionally obtained their cover from the protection and indemnity associations also called P & I clubs. Liability cover protects the carrier against claims from cargo owners (or third parties) for losses suffered by them because of an error by the carrier, and in some cases, his servants or agents.

152. When a loss is suffered by the cargo owner because of an error of the carrier, the cargo owner claims against his cargo insurer, and the cargo insurer pays the cargo owner, but the cargo insurer then turns against the carrier and his liability insurer. Here, the situation becomes more problematic. Liability insurers are not there primarily to pay claims, but to avoid paying them. In the case of P & I clubs, the premiums which the ocean carrier pays his P & I club (the so-called "calls") fluctuate with the number and size of the carrier's losses. It is thus in both the carrier's and the club's interest to try to avoid paying the claims. A number of devices such as delaying tactics are employed. If a claim becomes time barred, even though it might have been legitimate, it can be rejected. For this reason neither the cargo owner nor his cargo insurer can depend on the carrier's liability in order to obtain compensation for losses suffered.

153. Transport carrier liability varies widely by mode and by country. It is generally higher on land and, particularly, in the air than at sea. In some countries, for example, railways are 100 per cent liable, while in others they are not liable at all. For road carriage there may be cases where the carrier is a one-truck company carrying the cargo owner's expensive container cargo. If the truck turns over and both the truck and its cargo become a total loss, it may be impossible for the cargo owner to obtain any compensation from the carrier, who might have been the truckdriver who could have died in the accident or who might otherwise declare bankruptcy rather than pay the claim. Adequate cargo insurance is therefore an absolute necessity for protection.

## Annex I

### TRANSPORT AND DISTRIBUTION COSTS

1. This annex contains a discussion on transport and distribution costs. In the first part, possible ways and means to reduce such costs are presented, with reference to specific examples. The second part attempts to quantify these costs based on two approaches: the first could be referred to as a macro-economic approach; and the second as a micro-economic approach.

#### A. Ways and means to cut distribution costs

2. The rationale of total distribution management (or distribution logistics) is to combine three technically related types of costs under one "total distribution cost" heading to define the basket from which alternative solutions have to be selected. The area within which the optimum solution of the problem is to be found is therefore considerably extended and the decision-maker is warned: before making a choice, remember that the logistics optimum for the firm is more important than the transport optimum.

3. In practical terms, this means that acceptable distribution alternatives can be designed and can result, in some cases, in higher transport costs for the firm. If the higher transport costs of one alternative are more than offset by reduced handling and storage costs, for example, then such an alternative is acceptable to the firm from the logistics standpoint. The following examples are worth mentioning.

#### 1. Warehouse location: a Swedish case

4. An interesting example concerning this issue is the case of centralized storage of telephones in Sweden. This case demonstrates that centralized storage sites and transport terminals located along large transport routes can substitute for geographic proximity in terms of lead time. The consequences of changing telephone distribution in Sweden from some 116 storage and order processing sites to one central, highly computerized operation with 24 sites are shown in the following table (figures are expressed in millions of Sweden krone):<sup>a</sup>

**Table 1**

| Cost category | 116 sites   | 24 sites    |
|---------------|-------------|-------------|
| Capital       | 28.7        | 6.0         |
| Labour        | 27.3        | 7.2         |
| Transport     | 1.2         | 4.8         |
| <b>Total</b>  | <b>57.2</b> | <b>18.0</b> |

5. As can be seen, inventory and labour costs were reduced by a factor of four, while the cost of transport went up by the same factor owing to the fast shipment of small parcels instead of full truck loads. This demonstrates that extra transport costs can be more than offset by productivity gains in

<sup>a</sup> The concept of logistic chains and its impact on transport trends and policy, document prepared by Prof. Sten Wandel, International Institute for Applied Systems Analysis (IIASA), TRANS/GE.36/R.20, for the Group of Experts on Transport Trends and Policy, Inland Transport Committee, Economic Commission for Europe, Geneva, July 1987.

the overall organization of industrial and commercial enterprises.

## 2. Proper packaging: the liquid milk case

6. The Food and Agricultural Organization of the United Nations (FAO) carries out very specific studies on production, packaging and distribution of basic food products. These studies are designed to assist a producer getting the widest possible market for his goods. They look at the various aspects and combinations of packing, storing and distributing the products under consideration. The case of milk is worth mentioning.<sup>b</sup>

7. In this study, various alternatives were considered for the packaging and distribution of liquid milk. Basically, milk can be distributed to retailers either in returnable containers (glass bottles or cans) or in single-service containers (cartons or plastic sachets). Those two distribution options require distinct network structures and service frequency. Corresponding costs per 1,000 litres are estimated for various levels of daily production. The following table presents those costs for a 50,000 litres per day plant throughput of pasteurized milk:

**Table 2**

| Cost category<br>(USD per 1,000 litres) | Returnable containers |             | Single-service ctnrs |                  |
|-----------------------------------------|-----------------------|-------------|----------------------|------------------|
|                                         | Glass<br>1/2 l        | Can<br>40 l | Carton<br>1/2 l      | Plastic<br>1/2 l |
| Capital & services                      | 14.3                  | 5.0         | 15.7                 | 7.6              |
| Direct labour                           | 5.4                   | 2.2         | 4.0                  | 4.0              |
| Transport to retailers                  | 10.8                  | 7.8         | 6.7                  | 6.7              |
| Packaging material                      | 8.5                   | 1.0         | 30.6                 | 17.0             |
| <b>Total</b>                            | <b>39.0</b>           | <b>16.0</b> | <b>57.0</b>          | <b>36.0</b>      |

It can be seen here that transport costs depend on the type of distribution selected as well as on the type of packaging used. An optimal combination of distribution organization and packaging technique can yield the cheapest delivered cost of the product.

## 3. Outsourcing: a survey of multinational companies

8. Outsourcing may be defined as the purchase of raw materials, semi-finished components, or finished products from foreign suppliers. While the motives for outsourcing are various, its role is important. According to a survey carried out in the United States,<sup>c</sup> the primary reason for purchasing materials and products from foreign sources is that it is less expensive than domestic production. In addition, companies are increasingly confronted by local-content legislation in countries where they plan to market their products and may have to purchase components locally in order to sell finished goods.

9. The survey showed that outside suppliers were the most common source of goods, followed by owned subsidiaries and joint-ventures. Outsourced goods distribution was managed by the purchasing function (inbound operations) for raw materials and components. For finished products, it was managed by the distribution function and other parties. The survey also showed that buyers of foreign products generally knew much more about distribution options and issues than do the corporate logistics staff.

<sup>b</sup> *Packaging, storage and distribution of processed milk*, Animal Production and Health Paper No. 11, FAO, Rome, 1978.

<sup>c</sup> This survey was commissioned by the firm Temple, Barker & Sloane, Inc. (TBS) and conducted in September 1986. It covered the "leading-edge" United States-based multinational companies and focused on current and planned distribution strategies for handling foreign-sourced materials and products.

10. In many cases, third-party forwarders were managing the entire outsourced goods movement from overseas plant to domestic operations. Over 40 per cent of all purchases were bought on a fob overseas basis but the distribution of the majority of goods was controlled by people outside the surveyed companies. Companies that had moved all outsourced goods to an fob overseas purchase arrangement reported savings ranging from 20 to 35 per cent of total logistics costs.

11. Purchasing of outsourced goods on a non-fob price basis is expected to increase with the growing use of third parties to manage overseas logistics operations. By increasing volumes with selected carriers and third parties, the surveyed companies also reported improved transit time reliability, allowing both enhanced customer service and JIT operations over long supply lines. Although JIT operations for outsourced goods were used in only 20 per cent of the cases, JIT distribution systems were expected to be used increasingly, requiring more complex and information-intensive distribution channels.

12. Companies tend to use separate logistics operations (overall management, transportation, warehousing, inventory) for moving foreign-sourced goods into the United States. Such distribution systems not only result in higher corporate overheads because of duplicate staffing; they also mean that scale economies are lost in the overall distribution operations. By neglecting to build volumes on combined domestic and international distribution channels, companies incur logistics costs that are generally higher on a per unit basis because they spread volumes across numerous, duplicated operations. In addition, delivery reliability is lower because many third-party distribution companies are involved in the movements.

13. The surveyed companies have modified their United States operations substantially to accommodate the efficient acquisition of outsourced goods. They have altered plant locations, relocated or built new warehouses and nearly one-third had shifted from one mode of transport to another. Acquiring goods from foreign countries is more complex than domestic sourcing. Typical problems are trade regulations, long lead times, labour issues, overseas control, communications, foreign currency fluctuations and erratic supply. The surveyed companies were increasingly using EDI<sup>d</sup> with suppliers and carriers to monitor outsourced goods product channels. This was particularly true for companies involved in JIT product movements.

14. In the survey, the companies stated that their emerging logistics strategies for outsourced goods included the streamlining of overseas vendor facilities so as to improve freight consolidation potentials. They also reported the increasing use of EDI to monitor and control foreign-sourced goods movements, the expansion of fob purchasing from an overseas factory so as to increase control over logistics costs and delivery reliability, and the trend towards single-group control of outsourced goods acquisition and distribution.

15. The emerging JIT distribution strategies included the reduction of lead times through the use of efficient transportation services, the installation of advanced computer software systems to monitor outsourced product flows, the improvement of product and vendor quality by pushing back inspection functions to earlier stages, the close co-ordination with carriers to minimize product channel inventory and improve delivery reliability, and the elimination of redundant warehousing and material handling operations for outsourced goods.

#### **4. Other ways to cut distribution costs**

16. The previous examples show that total distribution costs may be reduced by a proper selection of the location of warehouses or by the right choice in the form of distribution, packaging or outsourcing. Now, distribution costs can also be reduced by directly optimizing the transport cost element itself. That is, the aim is to find the most appropriate transport solution to a specific distribution problem. This involves an important trade-off between transport cost and transit time which is particularly relevant to high value goods. Goods in transit accrue financial costs. The longer the transit, the higher that cost. Therefore, both operating and financial costs must be taken into consideration when selecting the most appropriate transport route.

17. This trade-off can be quantified through a detailed analysis of the possible combinations of transport modes, which can lead to financial savings offsetting transport cost increases. Table 3 pre-

<sup>d</sup> A discussion on EDI is presented in Annex II.

sents a comparison of freight costs and transit times in sea-air multimodal transport services between Tokyo and various destinations. In comparison with an all-sea service, the all-air service increases transport costs by a factor of 4 (from about USD 6,000 to USD 24,000) and decreases transit time by a factor of 10 (from about 40 days to 4 days). On a USD 50,000 shipment, the financial cost during transport (at a 15 per cent annual interest rate) represents about USD 20 per day.

**Table 3**

*Comparison of freight costs and transit times  
in sea-air multimodal transport services*

*a) From Tokyo (Japan) to Central and South American countries*

**Commodity:** Electrical goods  
**FOB value:** USD 50,000  
**Measurement:** 22.5 cubic metres (one 20' container)  
**Weight:** 4,000 kg

| Destination                                 |                 | Bogota                               | Caracas                           | Manaus                         | Mexico City                      |
|---------------------------------------------|-----------------|--------------------------------------|-----------------------------------|--------------------------------|----------------------------------|
| <i>All-air service</i><br>(via Los Angeles) |                 | USD 25,485<br>4 days                 | USD 23,725<br>4 days              | USD 30,245<br>3 days           | USD 15,260<br>3 days             |
| <i>Sea-air service</i>                      | via Miami       | USD 5,200<br>22 days                 | USD 6,700<br>22 days              | USD 13,800<br>24 days          |                                  |
|                                             | via Panama City | USD 4,800<br>24 days                 | USD 6,200<br>24 days              | USD 10,100<br>26 days          |                                  |
|                                             | via Seattle     | USD 10,145<br>15 days                | USD 12,545<br>15 days             |                                |                                  |
|                                             | via Los Angeles | USD 12,900<br>15 days                | USD 11,200<br>15 days             | USD 18,200<br>15 days          | USD 4,400<br>14 days             |
| <i>All-sea service via</i>                  |                 | Barranquilla<br>USD 6,174<br>42 days | La Guaira<br>USD 6,353<br>33 days | Manaus<br>USD 6,410<br>36 days | Acapulco<br>USD 4,581<br>22 days |

*b) From Tokyo (Japan) to London (United Kingdom)*

**Commodity:** Electrical goods  
**FOB value:** USD 50,000  
**Measurement:** 25 cubic metres (one 20' container)  
**Weight:** 4,000 kg

| Modes of Transport                             | Freight Costs | Transit Time | Transshipment                   |
|------------------------------------------------|---------------|--------------|---------------------------------|
| <i>All-air service</i><br>(direct)             | JPY 6,000,000 | 3 days       | (consolidated<br>aircargo)      |
| <i>All-air service</i><br>(with transshipment) | JPY 3,500,000 | 7 days       | H. Kong, Taiwan<br>or Singapore |
| <i>Sea-air service</i>                         | JPY 2,600,000 | 10-14 days   | Hong Kong                       |
| <i>Sea-air service</i>                         | JPY 2,200,000 | 16 days      | Siberia                         |
| <i>Sea-air service</i>                         | JPY 2,000,000 | 16-18 days   | U.S. or Canada                  |
| <i>All-sea service</i>                         | JPY 400,000   | 35 days      | Southampton<br>or Felixstowe    |

Source: Shipping and Trade News, 24 February 1986 (a) and 21 October 1985 (b), Tokyo, 1985.

Note: In October 1985, USD 1 = 214 JPYs.

By reducing transit time from 40 to 4 days, a saving of about USD 720 can be obtained. The trade-off here is not in favour of the all-air service. However, there are combinations of sea-air services which yield a reasonable transport cost and an improved transit time. Such combinations, being a compromise between high-cost/short-transit time service and low-cost/longer-transit time service, are always ranked in terms of freight expenses and transit time between all-sea services and all-air services.

18. Table 4 shows an example of how a comparison of the distribution costs of a shipment between two different transport modes can be set up. This type of analysis may lead to unexpected transport solutions such as the solution selected by a French car manufacturer to ship "completely knocked down" (CKD) vehicles from its production plant in France to an assembly line in Nigeria. The transport chain between the car manufacturer's production plant in France and the Nigerian assembly line located in Kaduna (northern Nigeria) used air transport to cut down inventory costs. Under the conditions in Nigeria at that time, the air cargo bridge solution resulted in a 15 per cent saving in total distribution costs owing to the huge saving made on financial costs. These cases demonstrate that air transport, in certain cases, can really compete with sea transport, and that sea and air transport combinations can benefit the shipper.

**Table 4**

*Example of distribution cost analysis*

| <ul style="list-style-type: none"> <li>• Shipment of electronic equipment</li> <li>• Destination: Mexico</li> <li>• Average value per kg: FRF 130</li> <li>• Gross weight (sea): 68 tons</li> <li>• Gross weight (air): 66.3 tons</li> <li>• Volume of a shipment: 2.5 m3/T</li> </ul> |              |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| Hypothesis                                                                                                                                                                                                                                                                             | AIR          | SEA          |
| Door-to-door transit time                                                                                                                                                                                                                                                              | 9 days       | 41 days      |
| Annual interest rate                                                                                                                                                                                                                                                                   | 15 per cent  | 15 per cent  |
| Number of shipments per year                                                                                                                                                                                                                                                           | 40           | 10           |
| Average annual inventory at shipper's premises                                                                                                                                                                                                                                         | 0.8 ton      | 3.4 tons     |
| Average annual inventory at consignee's premises                                                                                                                                                                                                                                       | 2.5 tons     | 10.2 tons    |
| Cost elements (in FRF per kg)                                                                                                                                                                                                                                                          | AIR          | SEA          |
| Freight                                                                                                                                                                                                                                                                                | 14.15        | 2.58         |
| Packing                                                                                                                                                                                                                                                                                | 0.20         | 1.46         |
| Pre-transport                                                                                                                                                                                                                                                                          | 0.35         | 0.79         |
| Insurance                                                                                                                                                                                                                                                                              | 0.32         | 1.68         |
| Financial cost during transport                                                                                                                                                                                                                                                        | 0.49         | 2.26         |
| Order processing                                                                                                                                                                                                                                                                       | 0.12         | 0.08         |
| Post-transport                                                                                                                                                                                                                                                                         | 0.21         | 1.54         |
| Warehousing                                                                                                                                                                                                                                                                            | 0.66         | 2.59         |
| Financial cost of Inventories at origin and at destination                                                                                                                                                                                                                             | 1.93         | 7.58         |
| <b>Total Distribution Cost per kg (FRF)</b>                                                                                                                                                                                                                                            | <b>19.43</b> | <b>20.56</b> |

Source: "La logistique: ses applications aux PME/PMI", Pierre Carrère, Garnier Entreprises, Paris, 1984.

## B. Some figures on transport and distribution costs

19. To design properly an efficient distribution system for their products, manufacturers need to be aware of the relative importance of transport and distribution costs in the delivered price of products. As part of their marketing analysis, they must identify the most appropriate combination of transport modes, interfaces and transport technology which will enable them to offer quality products on time

at competitive prices. A number of factors are involved in this decision process. They have been analysed in various studies: some, for example, are distributed by the International Trade Centre.<sup>e</sup> More generally, from macro-economic surveys, shippers can get an idea of the relative importance of transport costs in international trade as well as of the relative importance of transport costs in total distribution costs.

## 1. A global view

20. In the annual publication of the *Review of Maritime Transport*,<sup>f</sup> an indication of global freight bills in world trade is presented as the ratio of *ocean freight expenses* to the *total cif value of imports*, by groups of countries. Such an analysis shows that, in 1987 (see table 5), the proportion of freight expenses in the total value of world trade amounted to 5.24 per cent. For developing countries, especially those in Africa and Oceania, this ratio is more than double that for developed market-economy countries, i.e. 8.90 per cent as against 4.39 per cent. This difference can be partly attributed to factors such as:

- (a) Developed market-economy countries are substantial importers by sea of bulk cargoes for which freight rates are relatively low;
- (b) Developed market-economy country importers exercise greater control over the level of freight rates applicable to liner imports than importers in developing countries;
- (c) Developing countries, particularly in some parts of Africa and Oceania, generally import goods by sea over longer distances and may consequently be using relatively more expensive liner services since, owing to the limited demand on certain routes, transport services cannot be available on the basis of appropriate economy-of-scale operations, resulting in higher costs to the users;
- (d) The location of a country with respect to major trade routes can facilitate a certain economy-of-scale derived from trunk hauling on those routes; and,
- (e) the figures shown in the table are economic aggregates built from the ratio of freight rates and insurance to cif values of goods for a particular country. The value of this ratio depends on the aggregate value of the freight rates and the aggregate value of the cif value of the traded goods. If the freight is high and the intrinsic value of the goods low, the ratio might be high. A country trading low-value goods might therefore have a high ratio.

21. It is worth observing (in table 5) that the ratio, except for developing countries in Europe, had decreased between 1980 and 1987. This reflects the fact that the value of international trade is increasing faster than total freight costs.

<sup>e</sup> *IPD: International Physical Distribution, a methodology for the IPD chain analysis*, project RLA/47/45, ITC, Geneva, July 1989, and *Manual on the physical distribution of export goods*, Volumes I & II, ITC, Geneva, 1987 and 1989.

<sup>f</sup> *Review of Maritime Transport 1988*, TD/B/C.4/320, UNCTAD, Geneva, 1989.

**Table 5**

*Estimates of total freight costs  
as a percentage of cif import value*

| Country group                      | 1980  | 1985  | 1986  |
|------------------------------------|-------|-------|-------|
| World total                        | 6.64  | 5.72  | 5.24  |
| Developed market-economy countries | 5.49  | 4.81  | 4.39  |
| Developing countries<br>of which:  | 10.44 | 9.17  | 8.90  |
| Africa                             | 13.42 | 11.03 | 11.30 |
| America                            | 8.85  | 8.46  | 8.74  |
| Asia                               | 10.41 | 8.91  | 8.36  |
| Europe                             | 8.23  | 8.31  | 8.34  |
| Oceania                            | 12.84 | 12.30 | 12.30 |

*Source:* Derived from IMF fob/cif factors and IMF import data, and from the UNCTAD *Review of Maritime Transport* 1988.

22. Another study<sup>a</sup> shows how distribution costs are disaggregated according to the type of commodity being transported (see table 6). It is interesting to observe that distribution costs represent a much lower percentage of the delivered value of manufactured general cargo than the one for cheap bulk cargo, where the costs are about three times higher.

**Table 6**

*Distribution costs as a percentage of delivered value  
(%)*

| Commodity                                 | Ocean freight | Inland freight | Logistics | Total |
|-------------------------------------------|---------------|----------------|-----------|-------|
| Cheap bulk cargo (ores, coal, fertilizer) | 30            | 25             | 15        | 70    |
| Grain                                     | 12            | 14             | 10        | 36    |
| Cheap general cargo (woods, metal, etc.)  | 10            | 10             | 15        | 35    |
| Manufactured general cargo                | 4             | 4              | 12        | 20    |

*Source:* John L. Eyre, Maritime impact studies, *A different game*, St Johns, Canada, June 1987.

23. A study on the coffee pricing chain<sup>b</sup> shows the progression of the coffee price as it follows the usual flow of coffee through its marketing chain. In the case of regular coffee, passing through the grower-trader network,<sup>c</sup> the price index increases from 100 (producer price) to 174 (export price-fob). The difference between the export unit value and the producer price includes the tax receipts of the government and the value added for packaging, grading, transportation, storage, marketing and distribution. Through the trader-processor network, the price index increases from 174 to 189 (import price-cif). The difference takes into account the shipping and insurance costs of transporting coffee from the country of origin to the country of destination. Through the processor-wholesaler-retailer

<sup>a</sup> John L. Eyre, *Maritime Impact Studies: A different game*, presented at the Canadian Transport Research Forum, St Johns, Newfoundland, June 1987.

<sup>b</sup> *Studies in the processing, marketing and distribution of commodities: the processing and marketing of coffee*, (TD/B/C.1/PSC/31/Rev.1), United Nations Publications Sales No. E.84.II.D.11, UNCTAD, United Nations, New York, 1984.

<sup>c</sup> Transactions also take place between: small grower-big grower or co-operatives, grower-broker, grower-governmental agency, broker-trader, broker-governmental agency, broker-processor, governmental agency-trader, governmental agency-processor, trader-processor, etc.

network, the price index steps up from 194 to 309 (retail price).<sup>j</sup> The difference includes the wholesaler's and retailer's values added. The study found that, in many cases, one half of the retail price goes to the growers, to producing country governments (through taxes), and to traders (and shippers). The other half goes to processors and distributing companies and consuming country governments. Within this second half, the manufacturing value added represents approximately one quarter of the retail price. Overall, gross margins from the activities of trading, processing and distributing companies could be as high as one quarter of the retail price of coffee. Developing countries could thus, by increasing their share of the value added in processing and marketing internationally coffee, derive further benefits from their production of raw coffee. However, the growing concentration in the ownership of the processing and distribution industry by leading transnational corporations in the coffee industry is a constraint on the independent entry of other coffee producers (particularly the smaller ones) into major consumer country markets and on the increase of their share of coffee value-added.

## 2. An industrial view

24. In various developed countries, analysis has been carried out to evaluate the relative importance of the transport budget line within the total revenues of given industrial sectors. As an example, table 7 presents an analysis of the main industrial sectors of the French economy (1983), according to their NAP ("Nomenclature d'Activités Produits") code.<sup>k</sup> For each industrial sector, the importance of value-added, stock, transport and other services (including material supply) is given as a percentage of the total revenue of the sector. From table 7, it may be observed that the transport element (which covers transport requirements for both material procurement and physical distribution) represents only between 1 and 9 per cent of the total revenue of the industries. It can also be observed, in table 8, that the relative importance of transport cost in the value of a product tends to decrease as the product passes through industrial transformation. This ratio change is essentially owing to the increase in the unit value of the product being further and further enhanced, and is particularly the case for wood, textiles and even bread.

25. Other analyses have tried to estimate not only transport costs but also total distribution costs for various industrial sectors. In the case of the French economy in 1987, these costs fluctuated between 3 and 11 per cent of the sales value of the products, with an average of 9.18 per cent (see table 9). The transport cost itself represented only 30 per cent of this distribution cost. A similar study<sup>l</sup> was carried out in the United States and reached the same conclusions. For the "typical business unit" in manufacturing, the raw materials, supplies and purchase components represent 56.9 per cent of the value of shipments. The remaining 43.1 per cent are considered to be "value-added" in manufacturing, distributed as follows: manufacturing and marketing costs, 19.3 per cent; operating margin and interest, 14.0 per cent; logistics costs, 9.8 per cent.

## 3. Logistics costs

26. A French transport magazine<sup>m</sup> issues a regular analysis of supply and distribution logistics costs for specific industrial sectors. Examples of such analyses appear in tables 10 and 11. These costs are obtained from official statistical aggregations of data available for all the national companies within a given sector. In these analyses, logistics costs include the following elements: transport, material, personnel, packing, warehousing, and financial charges. Table 10 shows the participation of each cost element as a percentage of total revenue for some selected industrial sectors. From table 11, one can observe that the logistics costs of those industrial sectors include between 30 and 40 per cent of transport expenditures, and that warehousing represents between 25 and 40 per cent of the logistics costs.

<sup>j</sup> In an interview (*Le Monde*, December 1989), the President of the Republic of Côte d'Ivoire, Mr. Houphouët-Boigny, referred to the huge gap between the price a coffee grower gets when he sells a kilo of coffee (CFA 300) and the price of a cup of coffee in an European restaurant (CFA 600). Considering that a kilo of coffee serves about 50 cups, the relation here between grower price and consumer price is 10: 100! The difference is swallowed by the distribution system.

<sup>k</sup> SESSI et SCEES. Enquête Annuelle d'Entreprises de 1983, Paris.

<sup>l</sup> 1983 NCPDM Productivity Study Survey Data Base, Oak Brook, United States, 1984.

<sup>m</sup> *Logistiques Magazine*, Paris.

**Table 7**

*Participation of the various elements of total revenue by industrial sectors  
(Figures are percentage values of total revenue)*

| Code<br>NAP | Industrial sector<br>Description           | Components of Total Revenue |                     |                         |                      |
|-------------|--------------------------------------------|-----------------------------|---------------------|-------------------------|----------------------|
|             |                                            | Val. added<br>(per cent)    | Stock<br>(per cent) | Transport<br>(per cent) | Others<br>(per cent) |
| 09          | Extraction & preparation of iron ore       | 65.9                        | 23.0                | 1.6                     | 9.5                  |
| 10          | Steel industry                             | 22.0                        | 21.9                | 5.2                     | 50.9                 |
| 11          | First steel transformation                 | 29.0                        | 20.6                | 4.4                     | 46.0                 |
| 12          | Extraction & preparation of no-iron ore    | 58.2                        | 9.0                 | 2.5                     | 30.3                 |
| 13          | Metallurgy & first transformation non-iron | 28.8                        | 26.6                | 3.4                     | 41.2                 |
| 14          | Production of various minerals             | 47.7                        | 18.9                | 9.3                     | 24.1                 |
| 15          | Prod. of construction materials            | 39.2                        | 14.3                | 6.6                     | 39.9                 |
| 16          | Glass                                      | 45.5                        | 18.7                | 7.2                     | 28.6                 |
| 17          | Basic chemistry                            | 21.2                        | 13.5                | 4.3                     | 61.0                 |
| 18          | Parachemistry                              | 31.2                        | 17.2                | 4.0                     | 47.6                 |
| 19          | Pharmaceutical industry                    | 29.1                        | 14.5                | 3.3                     | 53.1                 |
| 20          | Foundries                                  | 43.7                        | 18.5                | 5.0                     | 32.8                 |
| 21          | Metalworks                                 | 41.8                        | 21.3                | 3.0                     | 33.9                 |
| 22          | Agricultural machinery                     | 31.4                        | 22.2                | 3.1                     | 43.3                 |
| 23          | Industrial machinery                       | 41.8                        | 26.7                | 3.1                     | 28.4                 |
| 24          | Production industrial equipment            | 38.5                        | 51.3                | 3.6                     | 6.6                  |
| 25          | Manuf. equipments for handling and mining  | 32.1                        | 30.8                | 3.6                     | 33.5                 |
| 27          | Office machines                            | 44.5                        | 21.3                | 2.2                     | 32.0                 |
| 28          | Electrical machinery                       | 42.3                        | 42.1                | 3.7                     | 11.9                 |
| 29          | Manufacture of electronic equipment        | 42.4                        | 35.8                | 2.8                     | 19.0                 |
| 30          | Manufacture of household equipment         | 36.4                        | 19.2                | 2.8                     | 41.6                 |
| 31          | Transport equipment                        | 27.9                        | 15.0                | 2.8                     | 54.3                 |
| 32          | Shipbuilding industry                      | 36.1                        | 29.3                | 1.1                     | 33.5                 |
| 33          | Airplane building industry                 | 42.0                        | 29.6                | 1.7                     | 26.7                 |
| 34          | Precision instruments                      | 44.2                        | 23.0                | 2.6                     | 30.2                 |
| 35          | Meat and meat preparations                 | 13.8                        | 4.7                 | 1.9                     | 79.6                 |
| 36          | Dairy products                             | 14.3                        | 6.0                 | 2.2                     | 77.5                 |
| 37          | Can fabrication                            | 26.7                        | 22.9                | 3.1                     | 47.3                 |
| 38          | Bread industry                             | 39.0                        | 4.4                 | 2.6                     | 54.0                 |
| 39          | Crop industry                              | 16.3                        | 8.4                 | 3.3                     | 72.0                 |
| 40          | Food preparations                          | 23.4                        | 22.4                | 4.1                     | 50.1                 |
| 41          | Beverages                                  | 31.9                        | 38.0                | 2.8                     | 27.3                 |
| 43          | Artificial fibres                          | 15.7                        | 15.3                | 4.5                     | 64.5                 |
| 44          | Textile products                           | 35.7                        | 21.2                | 2.4                     | 40.7                 |
| 45          | Leather manufactures                       | 37.4                        | 19.8                | 1.9                     | 40.9                 |
| 46          | Footwear                                   | 41.1                        | 17.9                | 2.6                     | 38.4                 |
| 47          | Clothing                                   | 42.3                        | 15.4                | 2.3                     | 40.0                 |
| 48          | Wood manufactures                          | 34.4                        | 20.5                | 4.3                     | 40.8                 |
| 49          | Furniture                                  | 39.0                        | 18.1                | 3.9                     | 39.0                 |
| 50          | Paper and manufactures                     | 30.7                        | 14.0                | 4.2                     | 51.1                 |
| 51          | Printing and publishing                    | 38.5                        | 7.2                 | 3.2                     | 51.1                 |
| 52          | Rubber industry                            | 41.1                        | 20.7                | 3.5                     | 34.7                 |
| 53          | Plastic transformation industry            | 34.5                        | 13.4                | 3.8                     | 48.3                 |
| 54          | Various industries                         | 42.1                        | 21.9                | 2.9                     | 33.1                 |

Source: SESSI et SCEES. Enquête Annuelle d'Entreprises de 1983.

**Table 8**

*Participation of the various elements of total revenue by circuits  
(Figures are percentage values of total revenue)*

| Code<br>NAP                  | Industrial sector                          | Components of Total Revenue |                     |                         |                      |
|------------------------------|--------------------------------------------|-----------------------------|---------------------|-------------------------|----------------------|
|                              | Description                                | Val.added<br>(per cent)     | Stock<br>(per cent) | Transport<br>(per cent) | Others<br>(per cent) |
| <b>Metallurgy</b>            |                                            |                             |                     |                         |                      |
| 10                           | Steel industry                             | 22.0                        | 21.9                | 5.2                     | 50.9                 |
| 11                           | First steel transformation                 | 29.0                        | 20.6                | 4.4                     | 46.0                 |
| 13                           | Metallurgy & first transformation non-iron | 28.8                        | 26.6                | 3.4                     | 41.2                 |
| 20                           | Foundries                                  | 43.7                        | 18.5                | 5.0                     | 32.8                 |
| 21                           | Metalworks                                 | 41.8                        | 21.3                | 3.0                     | 33.9                 |
| <b>Chemistry</b>             |                                            |                             |                     |                         |                      |
| 14                           | Production of various minerals             | 47.7                        | 18.9                | 9.3                     | 24.1                 |
| 17                           | Basic chemistry                            | 21.2                        | 13.5                | 4.3                     | 61.0                 |
| 16                           | Glass industry                             | 45.5                        | 18.7                | 7.2                     | 28.6                 |
| 18                           | Parachemistry                              | 31.2                        | 17.2                | 4.0                     | 47.6                 |
| 19                           | Pharmaceutical industry                    | 29.1                        | 14.5                | 3.3                     | 53.1                 |
| 52                           | Rubber industry                            | 41.1                        | 20.7                | 3.5                     | 34.7                 |
| 53                           | Plastic transformation industry            | 34.5                        | 13.4                | 3.8                     | 48.3                 |
| <b>Vehicle manufacturing</b> |                                            |                             |                     |                         |                      |
| 31                           | Car manufacturers and transport equipment  | 27.9                        | 15.0                | 2.8                     | 54.3                 |
| 32                           | Shipbuilding industry                      | 36.1                        | 29.3                | 1.1                     | 33.5                 |
| 33                           | Airplane building industry                 | 42.0                        | 29.6                | 1.7                     | 26.7                 |
| <b>Food processing</b>       |                                            |                             |                     |                         |                      |
| 35                           | Meat industry                              | 13.8                        | 4.7                 | 1.9                     | 79.6                 |
| 36                           | Milk industry                              | 14.3                        | 6.0                 | 2.2                     | 77.5                 |
| 37                           | Can fabrication                            | 26.7                        | 22.9                | 3.1                     | 47.3                 |
| 40                           | Food products industry                     | 23.4                        | 22.4                | 4.1                     | 50.1                 |
| <b>Bread</b>                 |                                            |                             |                     |                         |                      |
| 38                           | Bread industry                             | 39.0                        | 4.4                 | 2.6                     | 54.0                 |
| 39                           | Crop industry                              | 16.3                        | 8.4                 | 3.3                     | 72.0                 |
| <b>Textile</b>               |                                            |                             |                     |                         |                      |
| 43                           | Artificial fibre industry                  | 15.7                        | 15.3                | 4.5                     | 64.5                 |
| 44                           | Textile industry                           | 35.7                        | 21.2                | 2.4                     | 40.7                 |
| 47                           | Clothing industry                          | 42.3                        | 15.4                | 2.3                     | 40.0                 |
| <b>Leather</b>               |                                            |                             |                     |                         |                      |
| 45                           | Leather industry                           | 37.4                        | 19.8                | 1.9                     | 40.9                 |
| 46                           | Shoe industry                              | 41.1                        | 17.9                | 2.6                     | 38.4                 |
| <b>Wood</b>                  |                                            |                             |                     |                         |                      |
| 48                           | Mechanical woodworks                       | 34.4                        | 20.5                | 4.3                     | 40.8                 |
| 49                           | Furniture industry                         | 39.0                        | 18.1                | 3.9                     | 39.0                 |
| 50                           | Paper and carton industry                  | 30.7                        | 14.0                | 4.2                     | 51.1                 |
| 54                           | Various industries                         | 42.1                        | 21.9                | 2.9                     | 33.1                 |

Source: SSSI et SCEES. Enquête Annuelle d'Entreprises de 1983, Paris.

Note: "Others" includes material supply and other services.

**Table 9**

*Average distribution cost by industrial sector*

| Industrial sector                  | per cent of sales | FRF per kg |
|------------------------------------|-------------------|------------|
| All sectors                        | 9.18              | 7.73       |
| Perishable industrial products     | 10.86             | 8.53       |
| Chemistry                          | 8.22              | 1.23       |
| Hospital supplies                  | 8.76              | 15.42      |
| Non-perishable industrial products | 8.62              | 6.29       |
| value < FRF 80/kg                  | 8.72              | 3.61       |
| value > FRF 80/kg                  | 7.86              | 13.26      |
| Consumer products                  | 7.53              | 5.65       |
| Food products                      | 7.35              | 1.15       |
| Packed dry                         | 7.35              | 1.15       |
| Cans                               | 7.62              | 1.03       |
| Fresh/temperature-controlled       | 8.51              | 1.65       |
| Non-food products                  | 7.42              | 8.61       |
| Pharmaceutical < FRF 120/kg        | 5.66              | 3.03       |
| Pharmaceutical > FRF 120/kg        | 3.25              | 7.93       |
| Household equipments               | 9.65              | 11.51      |

*Source:* From Itasca/Davis, published in *Logistiques Magazine*, no. 31, Paris, October 1988.

*Note:* Average distribution costs present large variations from one industry to another. This emphasizes the importance for the sectors to develop data on standard costs which could be used for comparison within each specific sector. As of October 1988, USD 1 was approximately equivalent to FRF 6.3.

**Table 10**

*Comparison of logistics cost elements between industrial sectors  
(Figures are expressed as percentage of total revenue, for 1986)*

| Sector             | Transport | Material | Personnel | Packaging | Warehouse | Financial | TOTAL |
|--------------------|-----------|----------|-----------|-----------|-----------|-----------|-------|
| Chemistry          | 4.10      | 0.10     | 0.76      | 2.96      | 2.91      | 0.37      | 11.21 |
| ParaChemistry      | 3.64      | 0.12     | 0.96      | 3.82      | 2.95      | 0.39      | 11.88 |
| Pharmacy           | 3.70      | 0.09     | 0.89      | 4.26      | 3.00      | 0.37      | 12.31 |
| Vehicle Construct. | 2.79      | 0.13     | 1.10      | 0.65      | 3.01      | 0.48      | 8.16  |
| Textile fibres     | 3.52      | 0.03     | 1.06      | 2.81      | 2.50      | 0.31      | 10.23 |
| Textiles           | 2.21      | 0.10     | 0.58      | 0.86      | 2.87      | 0.39      | 7.01  |
| Clothes            | 2.11      | 0.12     | 0.73      | 0.80      | 2.73      | 0.47      | 6.96  |

*Source:* From "Baromètre Logistique" published monthly in *Logistiques Magazine*, Paris, 1988.

**Table 11**

*Distribution of cost elements within logistics costs  
(Figures are expressed as percentage, for 1986)*

| Sector             | Transport | Material | Personnel | Packaging | Warehouse | Financial | TOTAL |
|--------------------|-----------|----------|-----------|-----------|-----------|-----------|-------|
| Chemistry          | 36.59     | 0.89     | 6.79      | 26.44     | 25.95     | 3.34      | 100.  |
| Para Chemistry     | 30.63     | 0.98     | 8.05      | 32.16     | 24.86     | 3.32      | 100.  |
| Pharmacy           | 30.04     | 0.72     | 7.21      | 34.63     | 24.38     | 3.02      | 100.  |
| Vehicle Construct. | 34.25     | 1.61     | 13.42     | 7.95      | 36.85     | 5.91      | 100.  |
| Textile fibers     | 36.69     | 0.87     | 6.90      | 26.42     | 25.84     | 3.28      | 100.  |
| Textile            | 31.55     | 1.45     | 8.30      | 12.21     | 40.93     | 5.57      | 100.  |
| Shoes              | 40.80     | 0.90     | 6.55      | 5.77      | 40.84     | 5.14      | 100.  |
| Clothes            | 30.25     | 1.72     | 10.55     | 11.54     | 39.24     | 6.70      | 100.  |
| Furniture          | 37.30     | 2.68     | 13.74     | 7.51      | 32.69     | 6.08      | 100.  |

*Source:* From "Baromètre Logistique" published monthly in *Logistiques Magazine*, Paris, 1988.

## Annex II

### ELECTRONIC DATA INTERCHANGE

1. In the course of an international trade transaction, a large number of parties have to produce, check, transfer, receive, process and file hundreds of information elements relating to the goods, their transport and their payment. Such information transfer, traditionally carried out through filling in and transmitting paper documents, is slow, error-prone, and costly. With the proliferation of computers and the use of tele-transmission techniques, it has become possible to rationalize the processing and transmission of information. This is normally called "electronic data interchange" or simply EDI. EDI is generally defined as *the computer-to-computer transfer of commercial and administrative transactions using an agreed standard to structure the data pertaining to that transaction.*
2. The concepts of EDI are now being introduced in all developed countries where a number of systems have been created, linking branches of the same company, counterparts in the same industry (e.g. banks, airlines) or small groups of operational partners (e.g. Customs and freight forwarders; Customs and airlines; container operators and sea carriers; etc.). In order to monitor such developments, the Economic Commission for Europe (ECE) Working Party No. 4 on trade facilitation has been the centre in the elaboration of a set of rules for electronic data interchange for administration, commerce and transport, which became known under the acronym EDIFACT.
3. EDIFACT is a set of principles which facilitate the electronic interchange of business data between manufacturers, exporters, wholesalers, distributors, retailers, brokers, forwarders, shippers, consignees, carriers, banks, insurers, port authorities, etc. It replaces the usual paper documents with electronic files through uniformly built messages that follow international standards. By using EDIFACT, local EDI projects can grow without fear of technological obsolescence. Similarly, multimodal transport operators may use EDIFACT when they wish to establish regular means of communications with their clients in order to facilitate close supervision of the movement of goods from door to door.
4. EDIFACT sets out to "structure", i.e. to construct in an organized configuration the various information elements which have to pass from one computer to another to complete the transaction. It works in the same way as a language in structuring of words into sentences used to convey a meaningful message to the interlocutor. By analogy to a language, EDIFACT provides rules for assembling "words" into meaningful groupings which in turn are assembled into "sentences", on the basis of "grammatical rules". EDIFACT thus includes rules of syntax governing the assembly of data elements into segments which are grouped into messages. When such messages comply with the EDIFACT syntax rules and have been approved by Working Party No. 4, they received the designation, UN Standard Messages (UNSM).
5. In some cases, the functions of messages may be equivalent to those of traditional paper documents, in other cases, messages may represent separate tasks, or separate steps in the performance of a given task which, when combined, could be equivalent to the overall function of an existing document. A message may also be equivalent to several documents, as EDI is not a mere electronic transcription of existing paper-based procedures, but should lead to a substantial rationalization of the information flow.
6. Examples of messages which are equivalent to one traditional paper document are:
  - the **Commercial Invoice message**: a message claiming payment for goods or services supplied under conditions agreed between the seller and the buyer;
  - the **Despatch Advice message**: a message which enables the sender to specify the contents of a shipment of goods as well as additional information relating to the shipment, such as order information, product description, physical characteristics, type of packaging, marking, carrier information and configuration of goods within the transport equipment; or,
  - the **Purchase Order message**: a message specifying details for goods or services ordered under conditions agreed between the seller and the buyer.
7. An example of "progressive transfer" of information might be a **Booking message** sent in several

phases: first, the transport operator needs a rough estimate of the space required for the shipment as early as possible to facilitate his planning. The precise details may be supplied by the originator later as they become known, until finally the transport originator has sufficient data to create a bill of lading or an multimodal transport document.

8. An example of a message equivalent to several documents can be found in the *Data Interchange for Shipping Companies (DISCO)* project of the International Chamber of Shipping: the standard message under development is intended for the interchange of cargo-related data between shipping companies and their agents from port of loading to port of discharge and *vice versa*. The information exchanged is collected from exporters, agents, port authorities, etc. in the form of booking or despatch advice messages and will be used at the discharge end to create arrival notice, freight invoice, freight and cargo manifest messages or equivalent paper documents, as required.

9. In the Transport Sector, a number of projects are at various stages of implementation. The international electronic transport information service *TRANSPOTEL* aims at creating an electronic market place for the transport industry by bringing offer and demand together simply and efficiently. *UNICORN* is used by ferry operators to book berths and transfers for passengers and space for cars, and to issue tickets. The *DOCIMEL* project aims at replacing the CIM Rail Consignment Note by electronic data interchange between railways, their customers and Customs. The *COST306* project is intended for the interchange of goods transport messages. Other projects, such as the Data Interchange for Shipping (*DISH*) and *SHIPNET*, both originally launched in the United Kingdom, concern electronic data interchange between shippers, freight forwarders, shipping lines, roll-on/roll-off operators and airlines.

10. In this connection the International Maritime Organization (IMO) has recently submitted a set of proposals concerning six messages, covering the clearance of vessels, called EDIMAR.<sup>a</sup> Similarly, an international forwarding and transport message (IFTM) has been submitted to ECE Working Party No. 4 for approval. This message contains a message framework suitable for multimodal and multi-consignment international forwarding and transport. It can be used by all means of transport e.g., ocean, air, river, courier, pipeline, rail, road or short-sea.

<sup>a</sup> IMO FAL forms 1 - 6.

## Annex III

### SELECTING A TRANSPORT OPERATOR

1. When time comes for a buyer/seller to choose a suitable transport operator, a problem may arise because of the quantity of potential service providers. An interesting survey is being carried out every year by a French magazine specialized in foreign trade promotion.<sup>a</sup> This survey consists of asking a number of transport operators established in France to prepare service quotations for 10 specific and quite different shipments. A detailed description of the shipments is provided in table 1.
2. The results of the survey are quite interesting. First, not all operators presented a quotation for each shipment, underlining the specificity of the trade handled by certain operators. Second, some operators offered up to three quotations for the same shipments, emphasizing the spectrum of their services. Third, as it can be seen in the results presented in table 2, a given shipment might be delivered at a cost which fluctuates in a ratio from 1 to 3 depending on the transport operator selected and the transport chain proposed.
3. In selecting a transport operator, the buyer/seller will therefore have to take a decision which integrates market conditions, value of the goods and service cost. Probably, his decision will be influenced by his personal knowledge of the tendering transport operators and other intangible considerations. In any case, the buyer/seller must be able fully to understand the contents of the various quotations in order to negotiate with tendering transport operators and to design his own strategy for selecting the most convenient offer.
4. Each transport operator consulted gave one or more quotations for the requested shipments. Sometimes, an operator did not make any quotation for a shipment he could not handle. **Cost** is the quotation, expressed in French francs, made by the operator. **Time** is the transit time the operator is offering. **Means** refers to the means of transport reflected in the quotation. In some cases, the use of containers, grouping, conference lines or outsiders, is mentioned. In other cases, the operator is referring to its own tailored-made service (such as: CHRONOPOST, AIR CAT, etc.).

<sup>a</sup> *Le Moniteur du Commerce International* (MOCI), No. 841, Paris, November 1988.

Table 1  
Description of ten specific shipments  
(Cost figures are expressed in French francs: USD 1 = FRF 6.3)

| Identification number | Origin (France) | Destination (foreign country) | Type of goods     | EXW Value (FF) | Packing Number & unit weight         | Dimensions (LxWxH) in cm | Net weight (kg) | Volume (cubic metre) | Observations            |
|-----------------------|-----------------|-------------------------------|-------------------|----------------|--------------------------------------|--------------------------|-----------------|----------------------|-------------------------|
| 1                     | Toulouse        | Kiruna Sweden                 | magnetic tapes    | 15,000         | one box 16 kg                        | 60x20x25                 | 16              | 0.030                | small but expensive     |
| 2                     | Bethune         | Conakry Guinea                | bidding documents | none           | 5 boxes 5 kg                         | 32x23x22                 | 25              | 0.081                | urgent expensive        |
| 3                     | Etampes         | Milan Italy                   | optics            | 120,000        | 2 boxes 30 kg                        | 50x50x100                | 60              | 0.500                | sophisticated equipment |
| 4                     | Le Mans         | Denver USA                    | fur coats         | 160,000        | 14 boxes 15 kg                       | 120x50x20                | 210             | 1.680                | expensive clothes       |
| 5                     | Laguirole       | Singapore                     | knives            | 85,000         | 22 boxes 20 kg                       | 40x35x30                 | 440             | 0.924                | heavy and cheap         |
| 6                     | Champigny       | Athens Greece                 | perfume           | 225,000        | 60 boxes 25 kg                       | 60x40x35                 | 1,500           | 5.040                |                         |
| 7                     | Chateau-Renaud  | Tokyo Japan                   | skins             | 600,000        | 48 boxes 70 kg                       | 100x50x40                | 3,360           | 9.600                | important weight & vol. |
| 8                     | Wizernes        | Beirut Lebanon                | paper             | 81,000         | 16 rolls                             | d 98x94                  | 15,000          | 14.444               |                         |
| 9                     | Cognac          | New Orleans USA               | alcohol           | 1,054,000      | 1,950 boxes 18 kg                    | 40x32x30                 | 35,100          | 74.880               | delicate                |
| 10                    | Perpignan       | Longport UK                   | cement            | 35,360         | bags 50 kg on 32 pallets of 1,720 kg | 120x100x250              | 55,040          | 96.000               | heavy and cheap         |

Source:

Le Moniteur du Commerce International (MOCI), No. 841, Paris, November 1988.

Table 2

[illegible]

Table 2 (Cont'd)

(Cost figures are expressed in French francs: USD 1 = FRF 6.3)

| Transport Operators                       | International Shipments     |                              |                             |                              |                              |                              |                               |                               |                               |                              |
|-------------------------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|
|                                           | 1                           | 2                            | 3                           | 4                            | 5                            | 6                            | 7                             | 8                             | 9                             | 10                           |
| <b>Danzas</b><br>Cost<br>Time<br>Means    | 1,125<br>7 days<br>Trucking | 1,947<br>25 days<br>Sea Conv | 1,475<br>2 days<br>EURAPID  | 5,449<br>35 days<br>Cingroup | 2,480<br>25 days<br>Cingroup | 6,660<br>8 days<br>Trucking  | 14,773<br>40 days<br>Cingroup | 9,269<br>28 days<br>ConvAnvr  | 43,878<br>28 days<br>CntrCONF | 23,560<br>5 days<br>Rail     |
|                                           | 1,419<br>3 days<br>Air trp. | 2,381<br>5 days<br>Airgroup  | 1,995<br>3 days<br>Air trp. | 5,775<br>4 days<br>Air trp.  | 5,922<br>3 days<br>Airgroup  |                              | 59,674<br>4 days<br>Airgroup  | 10,876<br>30 days<br>FCL Anvr |                               | 32,796<br>2 days<br>Trucking |
|                                           |                             |                              | 1,270<br>4 days<br>Trucking |                              |                              |                              |                               |                               |                               |                              |
|                                           |                             |                              |                             |                              |                              |                              |                               |                               |                               |                              |
| <b>Emery</b><br>Cost<br>Time<br>Means     | 1,418<br>2 days<br>Air trp. | 5,285<br>7 days<br>COURRIER  | 2,056<br>2 days<br>Airgroup | 11,591<br>3 days<br>Airgroup | 7,313<br>6 days<br>Airgroup  | 12,733<br>? days<br>Airgroup | 38,491<br>6 days<br>Airgroup  |                               | 328,299<br>3 days<br>Air trp. |                              |
|                                           | 1,200<br>2 days<br>COURRIER |                              |                             |                              |                              |                              |                               |                               |                               |                              |
| <b>Feller</b><br>Cost<br>Time<br>Means    | 1,013<br>? days<br>Trucking | 1,544<br>? days<br>Airgroup  | 1,390<br>? days<br>Trucking | 9,240<br>? days<br>Sea trp.  | 3,536<br>? days<br>Sea trp.  | 5,052<br>? days<br>Trucking  | 11,230<br>? days<br>Sea trp.  | 14,606<br>? days<br>Sea trp.  | 55,415<br>? days<br>Sea trp.  | 36,039<br>? days<br>Trucking |
|                                           |                             |                              |                             | 7,140<br>? days<br>Air trp.  | 9,604<br>? days<br>Air trp.  |                              |                               |                               |                               |                              |
| <b>GEFCO</b><br>Cost<br>Time<br>Means     | 1,808<br>8 days<br>Trucking |                              | 848<br>3 days<br>Trucking   | 4,950<br>27 days<br>Sea Cntr | 5,158<br>7 days<br>Airgroup  | 7,063<br>12 days<br>Seagroup | 50,248<br>1 day<br>Air trp.   | 13,642<br>18 days<br>FCL cntr | 50,733<br>25 days<br>Sea cntr | 36,600<br>3 days<br>Trucking |
|                                           |                             |                              | 1,894<br>2 days<br>Airgroup | 5,898<br>4 days<br>Airgroup  |                              | 20,329<br>2 days<br>Airgroup |                               |                               | 260,170<br>4 days<br>Air trp. |                              |
| <b>Sagatrans</b><br>Cost<br>Time<br>Means | 1,233<br>5 days<br>Air trp. | 1,302<br>8 days<br>Air trp.  | 2,611<br>3 days<br>Air trp. | 7,392<br>5 days<br>Air trp.  | 7,653<br>6 days<br>Air trp.  | 13,936<br>3 days<br>Air trp. | 72,974<br>5 days<br>Air trp.  | 177,115<br>6 days<br>Air trp. | 229,665<br>6 days<br>Air trp. |                              |
|                                           | 1,860<br>4 days<br>SAGA XPR | 2,910<br>8 days<br>SAGA XPR  | 6,050<br>1 days<br>SAGA XPR |                              |                              |                              |                               |                               |                               |                              |

Table 2 (Cont'd)  
*Comparison of quotations for international shipments*  
(Cost figures are expressed in French francs: USD 1 = FRF 6.3)

| Transport Operators | International Shipments |          |       |       |       |        |        |        |         |         |
|---------------------|-------------------------|----------|-------|-------|-------|--------|--------|--------|---------|---------|
|                     | 1                       | 2        | 3     | 4     | 5     | 6      | 7      | 8      | 9       | 10      |
| SCAC                | Cost                    | 1,478    |       |       |       |        |        |        |         |         |
|                     | Time                    | 3 days   |       |       |       |        |        |        |         |         |
|                     | Means                   | Airgroup | 1,459 | 2,393 | 5,397 | 14,950 | 54,838 | 12,579 | 52,272  | 41,015  |
|                     | Cost                    | 1,411    |       |       |       |        |        |        |         |         |
|                     | Time                    | 2 days   |       |       |       |        |        |        |         |         |
|                     | Means                   | direct   | 2,536 | 2,336 | 4,795 | 17,208 | 18,630 | 12,258 | 327,760 | 228,102 |
|                     | Cost                    |          |       |       |       |        |        |        |         |         |
|                     | Time                    |          |       |       |       |        |        |        |         |         |
|                     | Means                   |          | 948   | ?     |       |        |        |        |         |         |
| Seabourne           | Cost                    |          |       |       |       |        |        |        |         |         |
|                     | Time                    |          |       |       |       |        |        |        |         |         |
|                     | Means                   |          |       |       |       |        |        |        |         |         |
| SITT                | Cost                    | 1,268    |       |       |       |        |        |        |         |         |
|                     | Time                    | 4 days   |       |       |       |        |        |        |         |         |
|                     | Means                   | Express  | 1,658 | 1 day |       |        |        |        |         |         |
|                     | Cost                    |          |       |       |       |        |        |        |         |         |
|                     | Time                    |          |       |       |       |        |        |        |         |         |
|                     | Means                   |          |       |       |       |        |        |        |         |         |
| SODEXI              | Cost                    |          |       |       |       |        |        |        |         |         |
|                     | Time                    |          |       |       |       |        |        |        |         |         |
|                     | Means                   |          |       |       |       |        |        |        |         |         |
| Van Ommen           | Cost                    | 900      |       |       |       |        |        |        |         |         |
|                     | Time                    | 2 days   |       |       |       |        |        |        |         |         |
|                     | Means                   | MACH +   |       |       |       |        |        |        |         |         |
|                     | Cost                    |          |       |       |       |        |        |        |         |         |
|                     | Time                    |          |       |       |       |        |        |        |         |         |
|                     | Means                   |          |       |       |       |        |        |        |         |         |

Source: Le Moniteur du Commerce International (MOCI), No. 841, Paris, November 1988.

## Annex IV

### CONTENTS OF A TOTAL DISTRIBUTION DOCUMENT<sup>a</sup>

#### *Section 1: Generalities*

- (1) List of official holidays by countries concerned;
- (2) Inventory of the manufacturer's file reference numbers for the on-going operations; and,
- (3) Description of the goods.

#### *Section 2: Parties involved*

- (1) Suppliers;
- (2) Selling locations;
- (3) Distributors; and,
- (4) Transport operators/carriers and Customs brokers.

#### *Section 3: Shipment of goods from manufacturer to distribution centres*

- (1) Generalities;
- (2) Shipment notice;
- (3) Shipment invoice;
- (4) Certificate of origin;
- (5) Packing list; and,
- (6) Transport documents.

#### *Section 4: Customs operations on arriving in warehouses*

- (1) Customs brokers;
- (2) Customs procedures;
- (3) Calculation of taxes and duties;
- (4) Bonded warehouses; and,
- (5) Customs tariff.

#### *Section 5: Distribution centres*

- (1) Generalities;
- (2) Required infrastructure and equipment conditions of warehousing facilities;
- (3) Renting of warehouses;
- (4) Check-up on apparent condition of goods delivered;
- (5) Acceptable conditions and constraints for storing goods;
- (6) Means of identification for the goods;
- (7) Localisation system;
- (8) Responsibility/liability of the warehouse operators; and,
- (9) Security measures.

#### *Section 6: Customs procedures on leaving warehouses*

- (1) Customs brokers;
- (2) Customs procedures;

<sup>a</sup> B. Van Kuik, *Logistique internationale appliquée*, Coordination du mouvement international de biens industriels, L'Antenne inter-Transports, Marseille (France), 1984.

- (3) Verification; and,
- (4) Customs tariff.

*Section 7: Procedures for shipment to customers*

- (1) Generalities; and,
- (2) Procedures for each country concerned.

*Section 8: Customs formalities on arrival in the importing country*

- (1) Generalities; and,
- (2) Procedures for each country concerned.

*Section 9: Insurance procedures*

- (1) Generalities;
- (2) Limits of liability;
- (3) Claim procedures;
- (4) Documents required by the Insurance Department of the manufacturer;
- (5) Management of claims;
- (6) Local representatives of insurance companies;
- (7) General average adjusters;
- (8) Time limit on notice of claims to open a claim file; and,
- (9) Letter of reservation to be addressed to the carrier.

*Section 10: Shipping procedures regarding damaged goods within technical warranty*

- (1) Claim covered by a global insurance policy;
- (2) Procedures to obtain reparation or substitution of the goods;
- (3) Import and export procedures regarding the application of a technical warranty clause;
- (4) Invoicing;
- (5) Procedures for re-expedition towards a repair centre;
- (6) Procedures for re-expedition towards a distribution centre; and,
- (7) Procedures for re-expedition to manufacturer/suppliers.

*Section 11: Shipping procedures regarding damaged goods outside technical warranty*

- (1) Invoicing system;
- (2) Shipment invoice;
- (3) Other shipping documents;
- (4) Price fixing;
- (5) Procedures for re-expedition; and,
- (6) Financial issues.

*Section 12: Inter-manufacture transfers*

- (1) Procedures; and,
- (2) Invoicing.

*Section 13: Invoicing*

- (1) Invoices based on shipments versus general invoices;
- (2) Invoicing for transport operators/carriers and Customs brokers;
- (3) Invoice for exportation;
- (4) Invoice regarding a claim for loss or damage; and,
- (5) Invoice regarding a claim under a technical warranty clause.